The Builder.

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The Control of Street Architecture.

THE protest recently made by several architects and artists in regard to the intrusion of very lofty buildings into the Strand has directed public attention again to the subject of the relation of street architecture to its surroundings, and the possibility or desirability of some official control being exercised over it, so as to prevent individual owners from intruding into the general design of a street anything which may be out of keeping or out of scale with it.

In regard to scale, however, there is more than one sense in which the word may be used. It may be the actual size of a building (which seems to have been the meaning in the protest referred to), or it may mean relative proportion of features. There is, moreover, a third kind of scale in street architecture, which is perhaps the most important of all, but which the memorialists referred to did not mention—viz., the relation between the height of the houses and the width of the street. To have buildings carried to a height greater than the width of the roadway is what spoils the proportions of a street. We have no measurements, but this proportion seems not to be exceeded in the case referred to, and the building next to the Gaiety Theatre strikes us as rather a fine one, and one is glad to see a boldly treated cornice projecting (by special grace we presume) far beyond the timid limits of the Building Act.

The important question, however, is, whether we are to seek for architectural uniformity and symmetry in street design, and, if so, how we are to ensure either getting it in the first instance or maintaining it afterwards. Our own most decided opinion is that nothing like the architectural dignity worthy of the streets of a capital city is to be attained without the subordination of individual tenements to a general architectural design. The London County Council had one glimpse of this fact when they arranged competition for designs for the new streets; but, having thus initiated a really fine idea, they took fright at once at the idea that the compulsion to a line of frontage would render the letting of separate properties more difficult. Money rules everything both with the official authorities and with the greater part of the public. If shops will not let fast enough when they are grouped under a comprehensive architectural scheme, the architectural scheme must be abandoned. And so it has happened with the few previous attempts which had been made in London to carry out a comprehensive design for a street. Regent-street was a well-intended and, for its day, a great effort. Its design has been ruined that owners may make higher profits. All the circuses (what the French call "rond-points") at the meetings of main streets have lost, as H. W. Brewer long ago pointed out, their "circus" character, their curves being all cut up by arbitrary excrescences. The few efforts we have made at dignified street architecture we cannot keep; anyone is allowed to spoil them as he pleases.

How do they do it in Paris, a capital which, as everyone knows, is far more stately and symmetrical in her principal streets and squares than ours? How is it that the Place Vendôme, the Rue de Rivoli, and other streets and squares of the same class are not cut up and spoiled as our humbler efforts are? Simply because people are not allowed to do it. The buildings in such streets and squares are under what is called a "servitude," an official control to which private owners must submit. Thus the owner who wanted to raise his houses in the Place Vendôme, and thereby break up the design of the square, was powerless to do so; the design was under the protection of a servitude dating from the time of Louis XIV., when the square was built. The "servitude" of the Place des Victoires dates from November, 1691, that of the Place des Vosges from July, 1605; that of the Place de la Concorde and the Rue Royale was imposed by letters patent of June 21, 1757. For the Rue de Rivoli, the Rue Castiglione, and the Place du Palais Royal, the servitude was fixed by Consular decrees of 17th Vendémiare and 1st Floréal, year X. Thus is the symmetry of Parisian architecture protected.

Surely it is time that we had some similar authority over street architecture in London; one which would not be swayed from its purpose by commercial considerations of the letting of property.

THE CRUX OF THE TRILITHON AT BAALBEK.

By Mr. R. Phené Spiers, F.S.A.

ONE of the most singular facts in connexion with the history of Baalbek is the entire absence of any contemporaneous accounts of the magnificent works which were carried out in that city by the Romans. The same remark applies to other Roman towns, and to the temples, colonnaded streets, and public monuments built throughout Syria, the only records as to their authors being found in inscriptions occasionally carved on the buildings themselves. In Rome itself all that would appear to have been known of Baalbek is found in representations on the reverses of coins of the IInd and IIIrd centuries. These representations of the temple and other buildings are identified by the letters H. E. L., signifying Heliopolis, the Greek name given to Baalbek, and, from what remains of the actual buildings, we are able to recognise that which they are intended to convey. The earliest record otherwise is found in the writings of John of Antioch (quoted in Wood's preface to the monographs of Baalbek published by Dawkins & Wood in 1757), surnamed Malala, which states that "Ælius Antoninus Pius (138-161 A.D.) built a great temple at Heliopolis, near Libanus, in Phœnicia, which was one of the wonders of the world."

Antoninus Pius is known as one of the greatest builders throughout Syria, and the truth of this attribution of the Temple of Baalbek to him is further corroborated by inscriptions on the pedestals of the propylæa stating that "two columns and their capitals were erected and carved to the memory of Antoninus Pius," a dedication which could only have been made on the assumption that the main portion of the acropolis was the work of that emperor. Such inscriptions are frequently found in ancient work, it being the custom to record them in favour of great benefactors.

The propylæa and the towers which flank them are said to have been built by Caracalla, but its substructure and that of the whole of the acropolis, excepting the smaller temple on the south side, is probably the work of Antoninus Pius, whose megalithic masonry rises some 30 ft. above the ground.

The earliest coins known with representations of the buildings at Baalbek are two of Septimius Severus (193-211 A.D.), showing the great temple; the latest one of Valerian (253-261 A.D.), in which the two temples are shown. There are intermediate coins of Julia Domna, Caracalla, Geta, Philip the Elder, and Ottacilia showing the temples and the propylæa. To some of these we shall refer later on.

The representations on these coins suggest that the works commenced by Antoninus Pius were continued during the reigns of these emperors. But, as Antoninus Pius died in 161 A.D. and the accession of Septimius Severus was in 193 A.D., there is a gap of at least thirty-two years, during which there may have been a temporary cessation. One of the coins of Septimius Severus, however, suggests in its design a slight change which had taken place in the podium, and that "the crux of the trilithon*" had already been solved, but not in the way which was originally contemplated.

Although Wood, in his preface, made no attempt to solve the problem, he is the only writer who has recognised that the trilithon was part of the die of an immense podium, or platform, on which the temple was to stand; he was also of opinion that this scheme was never carried out, and that the stereobate wall carrying the peristyle was probably left in its present condition. No other writers, so far as we know, have entered into the subject, and the accounts given in the guide-books are either vague or incorrect. The statements, for instance, that the foundations and other parts of the structure are præ-Roman are quite imaginary; the scheme of the acropolis, its propylæa, hexagonal and rectangular courts, and the great temple could only have been conceived by one man, and Ernest Renan's suggestion that the triple course under the plinth course of the trilithon might have been the work of the Seleucidæ cannot be accepted in view of the fact that this triple course is carried round the entire structure. Moreover, although at Damascus Seleucus Nicator is supposed to have erected portions of the temple now incorporated in the Great Mosque, Baalbek is never referred to. That the acropolis is built on the site of many successive temples of Baal is accepted as a matter of history, but here, as elsewhere throughout Syria and Asia Minor, the Romans would seem to have swept away all earlier work, removing even the foundations, so that not a vestige of the same is to be found on the site.

We propose in this article to deal only with the great temple dedicated to Jupiter, the Sun God, and to show its connexion with the trilithon, the three immense stones on the west side and in the rear of the temple. Fig. 1 is a reproduction from a photograph of a drawing made by Achille Joyau, grand prix de Rome, in 1865, showing the *état actuel* of the site. As during the last few years the excavations made by the Germans have brought to light many unknown features, with which we may deal in a future article, it will be of value to place on record the actual condition of the site in 1865, for comparison with that published by Dawkins & Wood, who visited and measured the buildings in the middle of the XVIIIth century, and in anticipation of the German publications on the subject which will probably soon be published. Already, two and a half years ago some plans, elevations, and sections were published in the Berlin archæological journals, and it was thought that they had completed their researches in the beginning of 1902. Apparently, however, the extremely complex nature of the problem they hoped to solve in 1902 has called for fresh researches, and they were still at work in the commencement of last year, having given strict instructions that no one should be allowed to take photographs of the buildings as they now stand. The drawings and photographs which they have already published, taken in conjunction with Joyau's drawings, of which the photographs are in our possession, give an exact representation of all that remains of the great temple and its immediate surroundings, so that there is now sufficient authority to attempt a conjectural restoration of the same, including that problem which is the title of our article. From Joyau's plan it will be seen that the great temple is placed at the rear of an immense artificial acropolis which, failing the eminence afforded by a natural hill as at Athens, the Romans built as an approach to the temple. The total length of the site occupied by the acropolis from the front of the steps which led to the propylæa (raised some 25 ft. to 30 ft. above the ground) to the wall in the rear which carries the trilithon is 845 ft. The width across the great court, and exclusive of the smaller temple, is 394 ft. The site on which it was built was a fairly level one, with a fall from east to west of about 10 ft. to 12 ft. The pavement of the hexagonal and great court is 2 ft. below that of the propylæa, and the ground beneath these courts is filled in solid; under the propylæa and the great courts and porticoes which surround the same are vaulted corridors and cellars.

The smaller building on the left is known as the Temple of Jupiter. It was built quite independently of the acropolis, and was approached by a flight of thirty-five steps, all of which have been found by the Germans embedded in the Mahometan building on the extreme left. This temple, in our opinion, formed no part of Antoninus Pius's work.

Coming now to the immediate subject of this article, Fig. 2 gives the plan of the great temple taken at the level of the stereobate or foundation wall which carried the peristyle of fifty-four columns; the greater portion of this wall still exists. The plan also shows the trilithon, the plinth on which it is built, its continuation to right and left, and its return on the north and south sides up to the platform of the great court. The dotted lines represent the Mahometan work built when the acropolis was converted into a fortress. The west elevation shows the remains of the work carried out by the Romans. The longitudinal and transverse sections show the relative height of the walls carrying the peristyle—of the plinth course on the north, south, and west sides, and the trilithon carried on the latter. The stereobate wall is 8 ft. thick, it rises 30 ft. above the level of the plinth, and is built in alternate courses, averaging 3 ft. 6 in. high, of headers and stretchers, the former the whole thickness of the wall and the latter measuring sometimes 29 ft. to 32 ft. long. The foundations are taken from the German drawings, which show that they were carried down to a depth of 25 ft. below the ground. This disposes of the theory put forward some time ago that the temple was built on a mound of earth which the trilithon by its weight kept in its place. The Romans always carried their foundations down to a great depth, and in the case of the plinth they are, according to the Germans, carried down to the rock.

* The Trilithon is the name given to the three immense stones measuring, respectively, 62 ft. 7 in., 61 ft. 8 in., and 63 ft. 4 in, placed end to end, with joints so accurate that it is impossible to insert the blade of a knife between them; 14 ft. high, 11 ft. to 12 ft. thick, and raised to a height of 25 ft. above the ground.

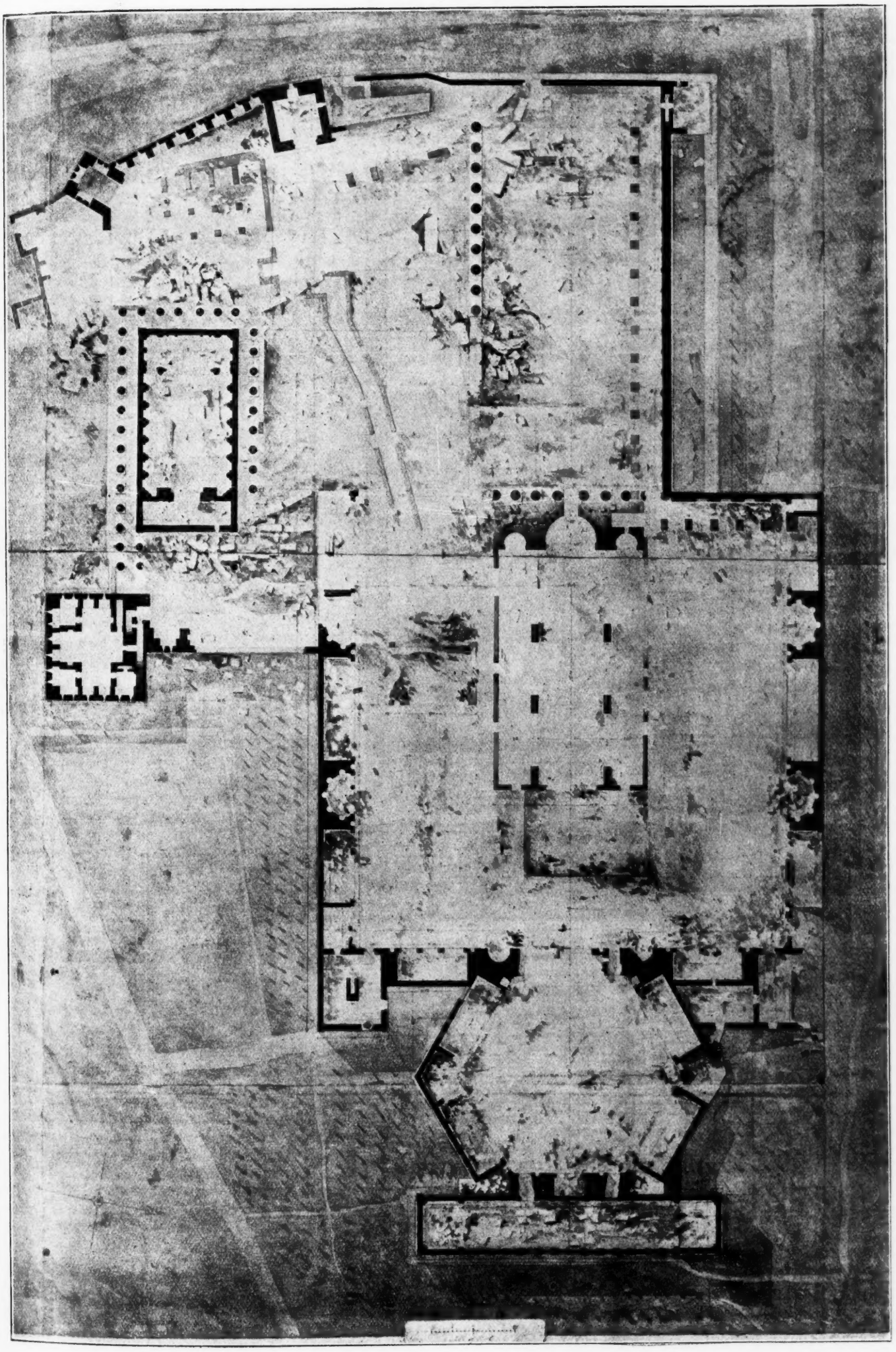

Fig. 1. *Baalbek: Joyau's plan of* 1865.

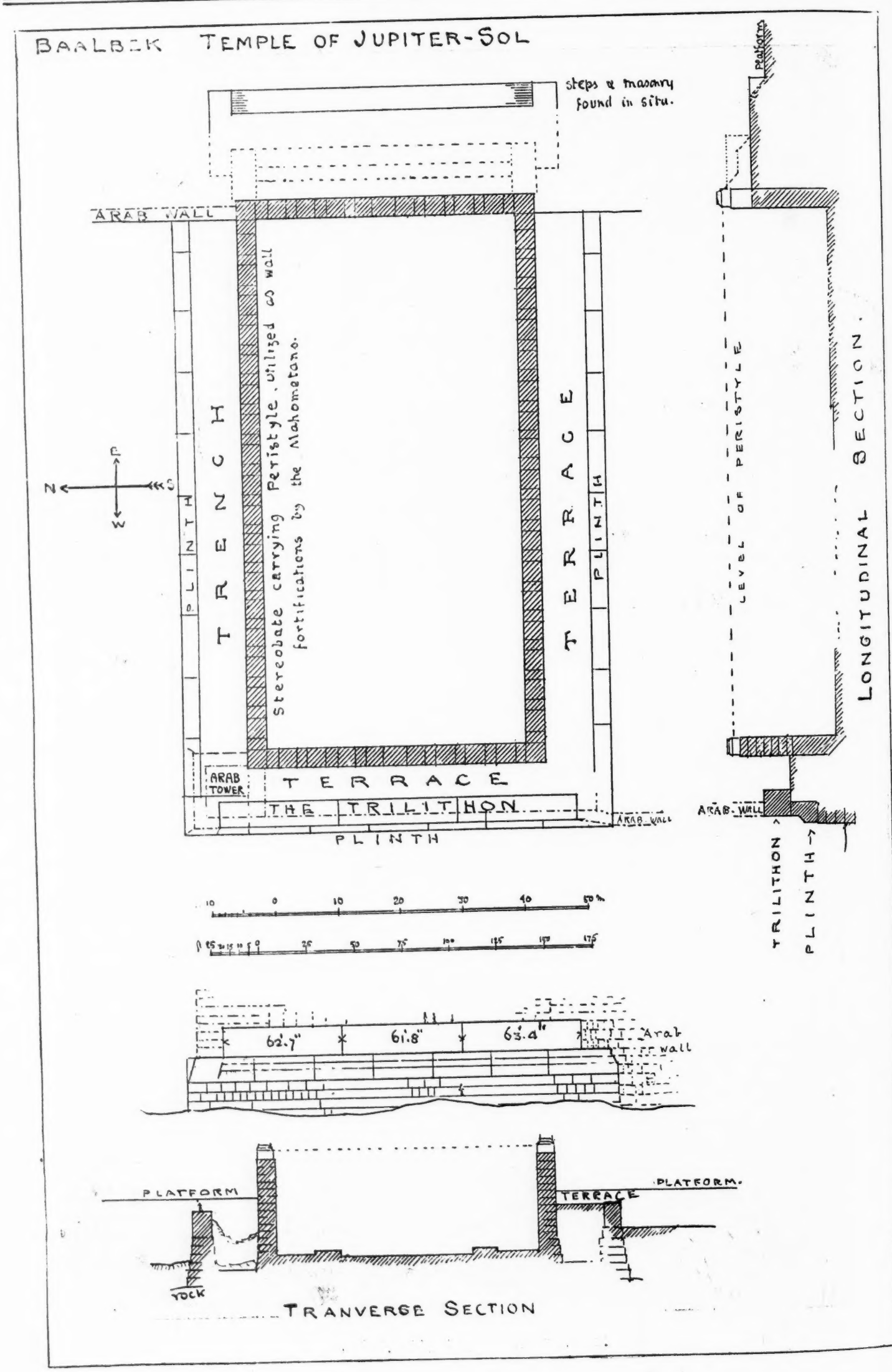
BAALBEK TEMPLE OF JUPITER-SOL
steps & masonry found in situ.
ARAB WALL
PLINTH
Stereobate carrying Peristyle, utilized as wall
fortifications by the Mahometans.
TERRACE
PLINTH
ARAB TOWER
TERRACE
THE TRILITHON
ARAB WALL
PLINTH
N
S
E
W
10 0 10 20 30 40 50 ft.
62'.7" 61'.8" 63'.4"
Arab wall
PLATFORM
TERRACE
PLATFORM.
ROCK
TRANVERSE SECTION
Platform
LEVEL OF PERISTYLE
ARAB WALL
TRILITHON
PLINTH
LONGITUDINAL SECTION.

Fig. 2.

Already in 1865 Joyau had noticed that the plinth course terminated on the west side about 18 ft. to the right of the trilithon, and, sinking a hole on the south side, he found its continuance and marked it on his plan. The Germans, who have excavated over the whole site and removed all the superincumbent earth to some distance from the acropolis, have laid bare this plinth and exposed a paved terrace between it and the stereobate wall on the south and west sides (see transverse section.) On the north side the plinth has always been visible throughout its whole length, but between it and the stereobate wall is now a trench (shown in section). The traces of a similar terrace, however, on this side were found embedded by the Germans in the fortification wall built on the west side of this platform, and it is stated that in former times the space below this terrace was used as a prison to which access was obtained through a door, which still exists in the lower portion of a north-west tower which, as well as this west wall, was built to command this terrace and protect it.

Now, it will be observed that the trilithon lies in the axis of the great temple, and the theory put forward, and generally accepted, is that it formed portion of the die of an immense podium, or platform, on which the temple was to be reared. The first problem, therefore, we have to consider is whether this stupendous enterprise was carried further than what actually remains. It seems quite certain that, if stones of similar magnitude to those of the trilithon had ever been raised, the Romans are not likely to have taken them away, and the Mahometans would only have been too glad to utilise them for their fortifications, being otherwise quite incapable of moving them. They would probably have liked to get rid of the plinth on the north side, where the stones measure some 30 ft. to 33 ft. long, because a terrace over 20 ft. high from the ground would, in case of attack, form a weak point in their fortifications, and might account for the tower and west wall already referred to, which they erected to protect that side. Secondly, on the west side the plinth projects some 3 ft. (see longitudinal section), with a weathered bevel at 45°. This projection was intended to be the base moulding of the die of the podium,* but on the plinth of the north and west side this work has never been executed, which suggests that it never carried a superstructure similar to that of the trilithon.† Thirdly, there lies in the quarry an immense stone of dimensions far exceeding those of the trilithon course, which we assume was quarried for the north-west or south-west angle. This, however, they were apparently unable to move. It would have been easy to cut it in two or three blocks, but this was not done or even attempted, for there are no incisions on the block. According to one theory, some unforeseen catastrophe must have occurred, such, for instance, as the death of the great emperor who conceived this immense undertaking, and who, not only here, but throughout Syria, erected many important temples. From the date of Antoninus Pius's death in 161 A.D. there seems to have been a temporary cessation of work in Syria. His successor, Marcus Aurelius, is not known to have built there, and the work which was being carried on at Baalbek must have required a stupendous outlay.

There is still a fourth reason to be given for the discontinuance of the great podium, and this is found on a coin of Septimius Severus (193-213 A.D.), the first actual record of the works at Baalbek. There are two coins known of Septimius Severus, one showing on the reverse the geometrical elevation of a decastyle temple, the other an isometrical view taken from the south-east (Fig. 3). As all the later coins contain a

Fig. 3.

similar representation to that shown on this second coin, we may assume that, although the great temple was not terminated till the middle of the IIIrd century, the scheme put forward by Septimius Severus is the one which was carried out; and, as it suggests a modification of Antoninus Pius's scheme, may assist us in solving the problem. In this coin of Septimius Severus an ordinary podium is shown with a flight of steps between spur walls on the east side. In front of it is raised a band not found in the representation of any other temple. This same feature is found in all the later coins, and, as it bears a very strong resemblance to the terrace to which we have already referred as having lately been found by the Germans on the south side of the temple, we venture to think that it solves the problem of the trilithon. Not being able, or being unwilling, to continue the erection of Antoninus Pius's great podium, the trilithon was left in its place and the stereobate walls were either encased with an ordinary podium or were left as they now exist. There is another coin which brings evidence to bear on this subject, and to which we shall refer later on, but for the moment it is necessary to turn to other discoveries made by the Germans.

It has always been a moot point as to whether the temple was ever completed, but, as in all the coins it is shown with the roof on, it must have had its cella walls built to carry the same, and, as Theodosius is said* to have transformed it into a Christian church, some kind of internal enclosure must have existed.

The church, of which the walls (shown on Joyau's plan) have been further exposed down to the pavement by the Germans, is of very much later date, being based on a type of plan adopted in the middle of the VIth century, where, probably owing to a change of ritual, an apse was built at the eastern end to take the place of those at the west end, and a central doorway was cut through the central west apse to form the principal entrance. These three apses, however, belong to an earlier church erected on the site, at what period is not known; but, as they were built on the flight of steps leading up to the great temple, we may assume that the walls of the cella were pulled down and the materials used in the erection of the new church walls. At a much later period, and probably when the acropolis was transformed into a fortress, all the masonry forming the substructure of the cella walls was utilised, and the section taken from the German drawings (Fig. 2) shows how completely all internal walls had been taken down.

Now, the three apses built on the flight of steps of the great temple have preserved, at all events, the lowest flight, and these have been traced by the Germans. Unfortunately, however, the discoveries made have introduced another dilemma. The blocks of masonry which enclosed the lower flight extend some 15 ft. on each side beyond the column of the peristyle. We say blocks of masonry instead of podium wall because there is no plinth to them, though the Germans in their conjectural restoration have calmly introduced one, cutting into the steps, which in their *etat actuel* they show abutting direct on the masonry block. If they found the steps, the plinth, if it existed, should have been shown on the latter. This introduces a new problem—if these blocks are the front of the podium wall, it must have been carried back, and the traces of its foundation would appear on the terrace; but there is no indication of the same, and, further, if in the west fortification wall built by the Mahometans they found the traces of the terrace, those of this 16-ft. podium would be discernible; but it is not, the Mahometan masonry is carried straight through to the stereobate wall, which also suggests that the latter was left in its pristine condition without even a podium-facing of the ordinary Roman type. Although the Germans have not given as yet any description of the possible conjectural restoration of the podium, they have suggested conclusions by dotted lines in their drawings. In the first series published they indicated on a geometrical drawing of the east front of the temple a podium of the dimensions conceived by Antoninus, showing plinth, die, and cornice, and they made the top of the latter correspond with that of the great court; but, unfortunately, the trilithon rises some 9 ft. above that level, so that, with a cornice 3 ft. high, this podium

* Throughout Syria, from the earliest times down to the VIIth century, the decorative features are carved out of the stone quite irrespective of the joints. The upper vertical portion of this plinth aligns with the trilithon, and would have formed part of the die of the podium.

† The Germans have indicated on their drawings of the north or south plinths a similar section to that of the west side, but their photographs show the same to be of square section without any projecting plinth moulding.

* The Paschal chronicle referred to in Dawkins & Wood, page 12, states that, whilst Constantine only closed the temples and shrines of the Greeks, Theodosius destroyed some, but the Temple of Baal at Heliopolis, the great and famous trilithon, he actually made into a church of the Christians.

would rise 12 ft. above the court. To meet this contingency, they lowered the plinth in their dotted lines, which is not a serious way of dealing with the difficulty. In the second series published they have rectified this by indicating the original intended podium standing on the plinth, *the section of which they show as worked with the bevel moulding*, which is not the case. On the plan published in the first series they carry back the 15-ft. podium to which we have already referred, there being no evidence whatever of its trace or the pavement of the terrace.

It is very difficult to account for the unusual width of the lower flight of steps (the only part found) leading up to the temple unless we assume that it was a part of Antoninus Pius's work intended for the great podium, and that the upper flights were restricted to the ordinary width, which we have indicated by dotted lines on our own plan. Further researches may perhaps find another solution, and, if not in this temple, in that of the smaller temple, where the Germans have found, embedded in the square Mahometan building on its west side, *an additional flight of steps below the level of its podium plinth*, so that there must have been a special treatment here of the spurs enclosing this flight.

We now come to the last piece of evidence in favour of the terrace theory, which is shown on the reverse of a coin of Philip the Elder (244-249) (Fig. 4). This

Fig. 4.

represents an isometrical view of the great temple taken from the north-east, with a vase and a circular altar in front of it, and, on the left-hand side, an immense flight of steps descending to a lower level. The artist here would seem to have wished to convey the impression that not only was the temple raised on a podium, but that it was, in addition, placed on a high level, and to do this he has omitted the two courts, and shown only the flight of steps leading up to the propylæa.

Donaldson, in his "Architectura Numismatica," conceived the idea that this was intended as a representation of the smaller temple, and in the plan he has drawn of the whole acropolis he has indicated a flight of steps to the small temple on the *west* side, which, if he had consulted Dawkins & Wood, he would have seen did not exist. He also shows an imaginary flight of steps on the south-west side in support of his theory; but the smaller temple is built at a lower level than that of the great temple, and on the natural level of the ground, which rises somewhat towards the south, so that if even there had been any steps there they would have been of descent and not ascent, and would in no way correspond to the representation on the coin. There is no doubt, therefore, that Wood was right in his ascription of the coin to the great temple, although the number of columns shown is less than actually existed. That which it is important to note here, however, is *the existence of a similar band in front of the podium*, which we have already pointed out in the coin of Septimius Severus, and this, we contend, is a representation of the north terrace. There are, however, two other features in this coin—first, a broad band in the foreground, and, second, a smaller wall running at an angle on the extreme right. The first would seem, from its importance and size, to represent the foundation walls of the buildings enclosing the great court, and which, if carried to their proper height, would have hidden the temple and its podium. The wall on the extreme right might be taken as a conventional representation of the *plinth carrying the trilithon*.

In our quotation from the Paschal chronicle it will be noted that special reference is made to the trilithon, which shows that in ancient times it was considered to be the chief feature of the temple; in fact, as Wood writes in his preface, "all travellers have taken notice of those stones, some, indeed, of scarcely anything else; nor is it surprising that after the decline of taste, when more attention was paid to mere magnitude than beauty, this temple should be chiefly noted for the largest stones which perhaps were ever employed in any building." It is a fair surmise, therefore, that the artist in Rome, who had never been to Baalbek, and only took his instructions from a general description of the ruins, may have desired to convey by the right-hand wall the important feature for which the temple was celebrated.

NOTES.

The Institute Gold Medal.

THE award of the gold medal this year to Sir Aston Webb will meet with universal approval; indeed it may be said that, the turn having come round this year for its offer to an English architect, no other choice could well have been entertained; and there will no doubt be a full and enthusiastic meeting to do honour to the presentation of the medal.

The Port of London.

NONE of the proposals before the public at the present time appear to meet with the approval of the dock companies. With regard to the Thames barrage scheme, the important question is raised whether the intended locks would be adequate for dealing with the present trade of the port quite apart from any increase. This matter obviously requires serious consideration, but it must not be forgotten that, as all the dock gates will stand continuously open, inward and outward traffic at Gravesend will be spread over all hours of the day, and not concentrated at times of high tide as under present conditions. The County Council Bill, contemplating less favourable terms to the companies than the withdrawn Government measure, naturally meets with strong opposition, in which we fancy ratepayers will be most ready to join. The Thames Conservancy Bill is, of course, out of the question, being utterly inadequate as a solution of the main problem. Not only the dock companies, but the public generally have a right to complain of the delay in dealing with the Port of London, for the proper control of which nothing but an independent authority on which all interests are equitably recognised can be accepted. Given such a body, with ample discretionary powers, it should be comparatively easy to arrive at a decision upon the engineering and administrative questions awaiting settlement.

The Liverpool Aqueduct Failure.

ONE notable point in connexion with the recent fracture of the aqueduct between Vyrnwy and Liverpool was the satisfactory performance of the automatic stop valve—above the point of damage—which speedily cut off the supply of water and so limited the extent of what might have been a most disastrous flood. For a valve of the kind, especially when fixed in a main of large size, a certain interval of time is absolutely necessary before the flow of water can be arrested with safety. The apparatus includes a main throttle valve closed by means of a heavy weight, and the rate at which this operation takes place is governed by a cataract action. In a large main the time occupied is not less than fifteen minutes, the latter part of the movement being performed at a progressively decreasing rate, with the object of preventing shock, and consequent further damage. It may be added that the valve is automatically set in operation by the release of a trigger, this being effected, through a system of mechanical movements, from a disc suspended inside the water main. Although a large volume of water escaped from the Vyrnwy aqueduct last week, the efficiency and value of the automatic valve was very strikingly demonstrated.

American Railway Accidents.

IN spite of all that has been said about the superiority of railway methods in the United States, there is not much for us to learn. We certainly are behindhand in respect of electric traction, and to some extent in the adoption of improved goods waggons. Very little more can be said to our discredit, and so far as concerns general management our lines are much ahead of any on the other side of the Atlantic. We referred last week to the abnormally heavy list of accidents taking place every year on American railways during shunting operations, and recent returns make clear the fact that the same lines still keep up their unenviable distinction in the way of accidents to passenger trains. During the year ending June 30 last no fewer than 3,787 passengers were killed and 51,343 injured. This deplorable record is mainly due to improperly constructed roads, imperfect equipment, the prevalence of single tracks, and avoidance of the block system. It is also due to

general carelessness and a spirit of recklessness that would never be tolerated in this country. If American railway officials would return the visits paid by many of our own engineers and managers, they might learn a good deal that would be useful to them and of real advantage to their fellow countrymen.

The Disfigurement of Clifton.

WHEN our "Note" of December 3 last was published there appeared to be some slight hope that the further spoliation of the Avon gorge might be prevented. Since that date a special committee of the Bristol City Council have received the report of Mr. Hawkshaw upon the proposals relative to behind-bank quarrying. This document recommends the opening of fresh quarries behind the top of the wooded slopes, by means of a narrow cutting commencing at the face of the present workings. Negotiations were opened with the owner of the land, and it really seemed as if the corporation intended to turn from their evil ways. Unhappily, now comes the ominous news that the Board of Trade, with the concurrence of the city authorities, have consented to renew the leases of the jetties by which alone the quarried stone can reach the Avon. If, as it is stated, this course has been taken without the imposition of restrictive conditions, the final ruin of the beautiful wooded bank cannot be long deferred. Even while professing the desire to prevent further disfigurement, the Bristol Corporation continue to increase the quantities of stone removed from the city quarries, and at the present rate the output cannot be much less than 50,000 tons a year—practically double the tonnage of two years ago. It is perfectly heart-breaking to think of such a beautiful scene being wantonly ruined in this way.

The Leicester Gallery.

AT the Leicester Gallery is an exhibition of drawings in colour and line of "Hunting and other subjects" by Mr. G. D. Armour. A good many of these have appeared in *Punch*, others we believe in other publications. They are the class of art in regard to which one looks as much at the title and the quotation in the catalogue, to see what the special point of the incident is, as at the drawing for its own sake; but they are very clever work of the kind. Among the colour drawings "Getting a Lead" (16) is admirable both in the head of the lady's horse in the foreground and in the foreshortened group of the man and horse struggling through the hedge; and "Down the Hill" (92) is another capital piece of drawing. One of the best and most humorous of the line drawings is that of the Irish fish hawker losing his fish but satisfied in "Keeping up with the Gentry" (22). One drawing (perhaps the only one) which is charming from the purely artistic point of view is the pretty sketch of a girl on horseback, "By the Sea" (38). The exhibition is naturally very popular, but it is hardly the kind of thing one goes to an art-gallery for.

Illustrations of the Thames.

THE Fine Art Society have collected at their gallery a number of old engravings of the Thames "from its source to the sea." We have never had the pleasure of seeing the "source" of the Thames (has anyone?), and the evidence of it furnished by the old engravings is conflicting and calculated to encourage a spirit of scepticism. But the collection as a whole is very interesting, both in showing some parts of the lower Thames under aspects which exist no longer, and some old bridges (old Windsor bridge for instance) which have been rebuilt; and also in the coloured reproductions of some of the sober and reposeful old water-colour views by Havell, Farington, and others. The main interest of the exhibition, however, is historical and topographical rather than artistic.

The Wallace Collection.

ON Monday Mr. M. H. Spielmann gave at the London Institution an excellent lecture on the Wallace Collection, tracing briefly the history of the getting together of the collection, which represents to some extent the taste and discernment of two or three successive Marquises of Hertford, though it was the late Marquis, "Lord Hertford of Bagatelle," as he used to be called, who did the most for it by his keen artistic perception and his ungrudging expenditure when works of undoubted excellence came in his way. Incidentally Mr. Spielmann said that it was Lord Hertford who brought Franz Hals into vogue among modern collectors, securing one of Hals's works at Christie's by a first bid of 2,000*l.*, which no one disputed with him, but which had the effect of altering from that time the auction prices for Hals's works, which had previously ranged from about 70*l.* to 80*l.* The numerous lantern illustrations of pictures no doubt formed to most of the audience the main attraction of the lecture, but they were accompanied by some excellent points in art-criticism, which it is to be hoped were not without their effect.

"Competition Ghosts."

OUR note on this subject has brought us two or three communications from other architects, enclosing letters all from the same person, who seems to have endeavoured to set up a regular business of doing other people's competition drawings for them. Apparently his policy is to tell his correspondents in each case that he has given special attention to the particular kind of building named in the competition, so as to be an expert in it; and in each letter there follows the usual statement that designs made by him have been placed first by assessors, etc. Any architects who are sufficiently foolish, or sufficiently deficient in self-respect, to listen to such proposals, may as well bear in mind that a man who would undertake that kind of jobbery would be as likely as not to "give away" his employers afterwards.

SELL'S TELEGRAPHIC ADDRESSES.—We have received from Mr. Henry Sell, 166, Fleet-street, E.C., the 20th annual volume of his Telegraphic Addresses. The Directory is published from official lists supplied by the authority of the Postmaster General, and it is complete to the end of 1904. It contains the names of 80,000 firms of the United Kingdom (those who have telegraphic addresses), and consists of 2,200 pages. In the new edition is a list of our Consuls in foreign countries. We have found the Directory a useful and reliable work.

HOW TO ATTAIN ORIGINAL THOUGHT IN ARCHITECTURE.*

WHEN I was asked to read a paper before your Society I somehow was thinking of the new art movement in this country (which is anything but a Renaissance), and decided to say a few words—words which might, I hope, assist us in the true study of architecture. We have fashions in architecture as well as in all other things—sometimes we admire and study Classic, sometimes Gothic, and so on; but what I think we ought to do is to so educate our taste that we can admire the beautiful in any style—indeed, in anything. This knowledge will gently lead us towards our ideal, which must, and ought to be, a national style. The great difficulty is the education of what we term taste. Now, we have each a passion, some kind of spirit within us, which if not broken up in any way will prove a tremendous power to us. Keep this spirit pure, concentrate it to your complete study; that is, though you have many studies, let them all lead to the highest, which is design.

A drop of water falls into a stream and is carried resistlessly away to the ocean, or it may be caught into some reservoir, and from there be forced into a fountain; but even here it cannot play any other part, it is but a drop of water. We can learn from this drop of water that we are but what we are, exactly the same; the same as the Egyptians, Greeks, etc., were thousands of years ago—worrying ourselves about love and arguing about religion and all other subjects. The difference is only the difference which exists between one blade of grass and another. Although we are so limited that we cannot fly or turn ourselves into a tree, there is at least one thing we can do, and that is, work harder than what we do—learn to work as hard as three or four average contemporary men.

There are two ways in which to educate our taste—first, by the study of nature; secondly, by the study of all the works of man (which is really nature). Both ways are equally important, as I hope to show.

While travelling in Greece I was struck by the similarity between the Greek mouldings and the contour of the hills and mountains. The Greeks were a healthy people, physically and mentally, so that, endowed with such rare gifts, they attained a high standard of excellence in the representation of nature in their works. They saw more clearly and truthfully than others what they did see. I would like to impress this thought on all who study architecture.

Impressions made upon the mind are undoubtedly influenced very materially by the condition of the body, and the one constantly reacts upon the other. It is proverbial that nature takes the tone and tinge of our mind; that the sun has no brightness and the flower no beauty for the unhappy; while if the heart is light, hope bright, and our prospects brilliant, the deepest gloom of winter's night cannot sadden us. Now I want to take you to a pleasant country glade, through which runs a little streamlet. You all know what a botanist, a photographer, etc., would say; if not, it little matters, as what interests us more is what an architect ought to see or say. Should he not see the whole at a single glance; the masses and groups of trees, the sky and clouds, the boulders and water; see the beauty and know each tree; see the difference of every leaf; watch the effect of light and shade; know the names and see the beauty of every flower, grass, and fern; but, above all, to recognise the decorative value of each, which means to know their construction; see the course of the water; the water, the reflections of the trees, the sky, etc.; see also the transparency and the bed of the stream; know the history, the birds, insects, atmosphere, etc.—if this common country glade be so beautiful and so full of interest, how much more beautiful and interesting must highest nature be, as we see it in man? We ought all, I think, to know the human figure well; even know the bones and muscles; certainly know the contours and proportion. Nothing can train and cultivate our taste so much or so well as the study of the human figure. The study of flowers comes next; and I would suggest that in all our studies of nature we should seek after the decorative qualities rather than minute detail.

To see the beauty in a land or sea scape we have noticed the necessity of infinite variety of

* A paper read before the Liverpool Architectural Society, on February 6th, by Mr. J. B. Fulton.

study; so in architecture—we must know construction thoroughly well, all materials and trades, the clients, etc., combined with a knowledge of painting and sculpture. But what are all these unless we have good taste? We see over and over again fellows working like slaves to build well, but without success. What is the reason of failure? Is the failure not the result of the mistake we all more or less make—the forgetting to educate our taste? We can only cultivate our taste by and through a tremendous struggle, because it is our character, and we know what this requires; to get higher than all creeds in religion and meet God face to face; away with all superstition; not copying hereditary thought, but making proper use of it, and so on. The second way that I suggested was the study of all that had ever been created by man, more especially the greater and more excellent buildings. You will have heard it said that it is not what we eat that strengthens us, it is what we digest; it is not what we read, it is what we remember, and so on. I beg to differ from this. If we have read a book, it is utterly impossible to forget all about it, under ordinary circumstances; after the matter having passed through the cells of our brains, it is bound to influence us some way or other. It is evident that much study is required to stimulate our imagination, because you might worry for weeks over what you consider to be a brilliant and original conception, and years afterwards discover that the same idea had been worked out centuries before. If you had known the previous one, of course, your ideas would have been much superior. I wish to show you some of the buildings that I was privileged to study while on the Soane Tour.

Egypt.

The country of perpetual sunshine and golden sunsets. I visited the cities of ancient Egypt, and there studied the great temples. The vastness of scale is tremendous, their very size giving a magnificence which few buildings have ever reached in any age. The influence of nature is very marked, even the columns being designed from the lotus. The Egyptians, I think, are one of the most conventional people who have ever existed on this earth; their conventionalism charmed me, as it is so suggestive to higher thought. Through it all there is a certain crudeness; but the decorative quality is so very excellent. We visited the Tombs of the Kings in Thebes. The Tomb of Sethos I. is most interesting, executed during the finest period of Egyptian art. Several rooms are unfinished, and there we saw the different stages of the decoration. I was particularly struck by the splendid drawing of the design which guided the sculptor. The sculpture is in most delicate relief, vieing in beauty with some of the earlier Italian masters in the Renaissance period. Their drawings of animals, plant-forms, birds, etc., show great skill in design. The statues were sculptured in the same spirit of conventional design. The position of statues between the columns in a colonnade is worthy of note, as the light and shade is very effective.

Greece.

A mountainous and lovely country; the architecture vieing in beauty with highest nature. I use the word "architecture" instead of "art," because in Greek architecture the arts met in perfect harmony. I well remember the tremendous excitement which filled my whole being as I climbed the Acropolis Hill in Athens, and when the Parthenon stood a reality before my eyes. I confess that I was disappointed, although as a ruin it is really magnificent. In design, dignity is its saving grace. I pictured in my imagination its grandeur when robed in all its glory; but could not get very enthusiastic over it. The north portico of the Erechtheium is a perfect work in architecture. While I was there a huge scaffold was erected round, as the Government was restoring it. I readily got permission and measured it. The capitals show great skill in design, and must rank amongst the finest works of art in the world. The sculpture, as you all know, is exceptionally fine; for instance, the frieze of the Parthenon, the figure of Victory at Olympia, the panel with Victory trying on her sandal, etc. I visited the recent excavations by the French Government at Delphi, and there got an idea of how imaginative the Greek sculptors were.

Roman.

We come to the treasury in architecture, and in Roman splendour see all previous buildings surpassed—at least, in magnificence, in architectural form, and conceptions. The interior of the Parthenon, I have little doubt, was very impressive, but nothing to compare to many of the Roman baths, etc. The Greeks were very conservative in their ideas, always building in perpendicular and horizontal lines. I have no doubt that to a great extent this was ignorance; they little dreamed what effects were possible by arches and domes. Roman architecture directly influenced the Renaissance, and there is no other style so greatly studied to-day throughout the world as the Roman. St. Peter's, in Rome, seems a fitting Renaissance monument to this great age. If someone would come forward and reveal the beauties in Roman architecture, as already has been done with Greek, a great impetus would be given to architectural design.

Byzantine.

Byzantine architecture is late Roman building, but with a truer spirit of beauty which Christianity could and can only give. I think that this is the style which we ought to study more, as it is so adaptable to our modern requirements. The construction is always so excellent, and refinement is shown down to the minutest detail. I had the pleasure of measuring many of the buildings in this period. The Palace of Belisarius, Constantinople, is a magnificent example of a domestic building, as you see from my measured drawing.

The Church Mosque of S. Sophia, Constantinople, was a revelation to me in every way. The construction is masterly, and the proportion of the interior is almost perfect, so that everything is in correct detail. This building ought to be the Mecca for architects.

Saracenic.

Although one may know the Saracenic buildings in Spain, etc., it is generally acknowledged that Cairo must be visited before we can have any definite idea of building in this style. The mosques and tombs are a revelation, and it would be an interesting study to trace their influence in more Western lands.

The average type of building grows from a square base, by pendentives is taken to the octagonal form, on which rests a dome. I measured and sketched several, as you will see from my drawings.

Turkish.

It seems natural to go direct from Saracenic to Turkish, as both are products of Mohammedan power. The latter, however, was more strongly influenced by Christian buildings, as I will show.

While in Constantinople we were fortunate in getting an *erada*, or permit, to sketch and measure the mosques. We spent three months studying the mosques; many of which are Byzantine churches. All the large mosques are built on the lines of S. Sophia; it was, and is seemingly, impossible for the Turks to design a mosque on any other principal.

I have but touched on some of the more cultured periods in architectural history, but sufficient, I hope, to show the absolute necessity of the study of all styles. Now, if we have a knowledge of the finest buildings, surely it is but reasonable to suppose that this knowledge, combined with our own individuality, will carry our thoughts higher and attain a greater height of excellence than if we forced ourselves to conceive the original ideas in the pride of our own natures.

We see the use and influence of nature in art. I sometimes wonder what effect tropical plant-forms would have in our modern design. I think that a tremendous impetus might be given to design from this source, as there must be thousands of forms that we have never even dreamed of.

WAR MEMORIAL, FARNHAM, SURREY.—The memorial to the soldiers of the parish of Farnham who fell in the South African war was recently unveiled in the parish church by Lieut.-General Sir John French, K.C.B. The memorial is placed in the north transept, on the east wall. It is of Italian statuary marble and Brazilian onyx. The design consists of two fluted pilasters with moulded bases and carved capitals supporting a semi-circular moulded cornice, in the centre of which appear the arms of Farnham in Ventian glass mosaic of blue and gold. The tablet itself is of marble, with a margin of Brazilian onyx. The work was executed by the Art Pavements & Decorations, Ltd., in accordance with designs by Mr. A. H. Guyer, architect, Farnham.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the Royal Institute of British Architects was held on Monday in the Meeting-room, No. 9, Conduit-street, Regent-street, W., Mr. John Belcher, A.R.A., President, in the chair.

Deceased Members.

The minutes having been taken as read, Mr. Alexander Graham, Hon. Sec., said he regretted to announce the decease of Mr. G. Hurst Stanger, of Wolverhampton, Fellow, elected in 1892, and of Mr. Walter Aston, Manchester, Fellow, elected in 1901.

Bequests to the Institute.

Mr. Graham said he had the satisfaction of announcing that the late Mr. J. T. Wimperis had bequeathed 1,000*l.* to the Institute, to be applicable at the entire discretion of the Institute, for the encouragement, promotion, and study of the knowledge of architecture or other purposes. Mr. Graham also announced that Mr. J. Macvicar Anderson had given twenty-four Architectural Union Company's shares and Sir Aston Webb nineteen for the purpose of promoting architectural education.

The Royal Gold Medallist.

The Chairman said it was his pleasing duty to announce that Sir Aston Webb had been nominated by the Council for the Royal Gold Medal this year.

The announcement was received with much applause, and the Chairman added, "This evidently meets with general approval, and his name will be at once submitted to the King."

President's Address to Students.

The President then delivered the following presidential address to students:—

Fellow-students of the art of architecture—I address you all as fellow-students, for with us, as I daresay you know, it is "once a student, always a student." Our service is not for a term of years; the brief period of formal apprenticeship is followed by another very similar in its abiding purpose to what the Germans of the old-time guilds used to call a youth's Wanderjahre—with this difference, that our period of Wanderjahre, our earnest search after the best, only terminates with life itself. We must always take a watchful interest in all that pertains to our art, and be ready, all of us, old and young alike, to assimilate every real advance, every true development.

To you who are now serving your term of formal apprenticeship I say, "Make the most of your opportunities, for they will pass all too quickly." The time thus dedicated to the acquisition of knowledge and the attainment of proficiency, to the training of your powers of observation and imagination, will prove all too short for the end you have in view. The mistress we serve is a jealous one; and if we would woo her successfully, we must be prepared to make sacrifices and to forego many indulgences. The ordinary amusements and pleasures of youth will often have to give way to the claims of your art, to the duty of sketching or measuring, or to the study of constructive art; in short, you must be ready to avail yourselves of any and every opportunity that may present itself for enlarging your experience and knowledge. Above all, take your art seriously, for it is only to the earnest student, we may almost say to the devotee, that the veil is lifted that shrouds the mysteries of our art.

It is with the greatest interest that year by year we examine the results of your efforts, and with the best of good wishes that we assign rewards and prizes. There are many who have not won prizes who yet have accomplished very good work—work which will stand them in good stead in after-life. To all I would say, "Do not rest upon your laurels; preen your wings for higher flights." The knowledge and discernment you have already acquired are as nothing to the more subtle secrets, the more hidden beauties, that await your earnest search.

I do not now propose, nor is this the occasion to discuss, the course of study necessary for the initial equipment of the architect: that is a matter which is being carefully thrashed out by the Board of Education. Nor will I venture to criticise in detail the admirable drawings submitted: this will be done leniently and sympathetically, I have no doubt, by Mr. A. N. Prentice.

But I do want to take this opportunity to emphasise the importance of a more systematic study of those buildings which are universally

recognised as good. "Quod semper, quod ubique, quod ab omnibus" is a dictum which we may very well borrow from the theological schools and, having borrowed, stick to. Moreover, I should like to suggest certain methods to be adopted in the study of such examples.

The student's first impulse perhaps is simply to annex the whole subject as "stock" or "copy." Now certainly it is a very right and proper thing to sketch the building as a whole; but while doing so we must not let our thoughts lie idle; we should endeavour to discover why the subject is beautiful or admirable, what are the elements in it which have contributed to that result. At first, it may be, such an effort seems to go unrewarded; but if the habit be persisted in, intelligent perception will awaken, little by little the light will grow, and soon it will be quite easy to disentangle from the mass, as it were, those characteristics, those laws, those conditions, which have made the building what it is.

While traversing some particular line, for instance, note its relative proportions to the other parts. Follow out, if you can, the methods of construction, and mark how the effects are produced. Examine the general masses from various points of view and study the composition of your subject, not only in respect of its component parts, but also in relation to its environment. The latter is of great importance, for one of the chief elements of success in a building is its adaptation to its surroundings. Here it is especially that "scale" comes in, for the scale of a building must be either in keeping with or in contrast to adjoining buildings or objects, just as colours must either match exactly or be complementary to one another. Scale is relative and determines the proportion of one part to another and of the several parts to the whole. It is like the dominant note or key in a musical composition.

You are probably all of you aware that sounds which harmonise and please the ear have fixed relations to one another. For instance, if you strike an object of a metallic or otherwise resonant nature, a trained ear can distinguish three notes in conjunction, viz., the fundamental or keynote, and the third and the fifth in the division of the octave. These "harmonics," as they are called, will be most clearly recognised in listening to the sound of a large bell. Colour also has its divisions and harmonics, and you will not get far in architecture without discovering that here also similar laws hold good, and that there is such a principle as a true proportion of parts in the scale of building. It is only by a diligent study of and a careful regard for these laws that we can effect a harmonious composition, which all the same can never be merely mechanical in architecture, any more than it can in music. There is as wide a range of possible combinations and developments in the one case as in the other. The great architects of every age and every country have exhibited as wonderful a variety of progressions and characteristics as can be found in the works of Mozart, Beethoven, Mendelssohn, or Wagner.

You should also have regard to the aspect of the building you are studying—whether it is situated in the narrow street, the broad thoroughfare, or in open ground. Note how the projections and lights and shadows are determined on each frontage. Where the sun penetrates reflected light may be taken advantage of. Projections and shadows on a south front are by no means the same as they would be with a north aspect. How well Vanbrugh, amongst others, understood this! I mention Vanbrugh because his insistence on this point is so obvious.

It is only thus by analysing and searching out the guiding principles which have actuated men in the past that we shall really profit by a study of their work. If we can discover the sequence of thought which has guided them in the achievement of fine results, we in our turn may, by taking thought, successfully work out the problems which come before us. Depend upon it, that which we admire in their work is not the result of careless, accidental, or haphazard arrangement of materials. No, there is thought behind it all—sometimes *naïf* and immature, and sometimes even "smelling of the oil"; but there it is, and the best results are just those upon which the best thought has been expended. If genius is not, as it has been defined, "an infinite capacity for taking pains," at any rate in architecture, it is very nearly akin to an infinite capacity for taking thought. The best thought, however, does not advertise itself, and the best work is not necessarily that which first arrests our attention. How often has it been our experience in the past, when going to a place a second or a third time, to come across some excellent building which altogether escaped our notice on a previous visit. Rely upon it, such a building will repay careful examination.

Do not be misled by the apparent simplicity of much of the best work, for this very simplicity, if not the outcome of profound thought, is the triumph of a practised genius. "Through the complex to the simple" is almost a law of mental evolution. Do not, therefore, fall into the error of a certain member of a building committee who remarked to the assessor in a competition, "I cannot understand why you have put So-and-So's design first. It is so simple—anybody could draw up a plan like that." When it was pointed out to him how difficult the other competitors had found their task, and how complex and incoherent some of their designs were, it began to dawn upon him that perhaps there was more in Mr. So-and-So's design than met the eye of a casual member of a building committee.

When you are making a study of a subject it is upon the work as a whole that you should concentrate your critical acumen. Do not allow your attention to be diverted by attractive or suggestive bits, and do not wander off into the by-paths of archæology. When you study mouldings, for instance, or similar features of a building, do not regard it as an opportunity for speculating what date, style, or period it belongs to, but regard it from the point of view of its true purpose and meaning. In the case of the mouldings, consider not merely their beauty of form, but their effectiveness in affording shadow and protection. Archæology has its place, but it should be kept there. It often usurps the interest and attention which ought to be given to the example as architecture. The glamour of historical romance has served to invest many a building with a purely factitious value. The accidental effects of age and decay appealing to the sentiment of the man pervert the judgment of the artist, to his own detriment and that of his art. This same sentimental halo, hanging around all that is ancient, is responsible for the many imitations, forgeries, and affectations which have so long dogged the footsteps and hindered the progress of genuine architecture, and which in some cases have proceeded to such an extreme of absurdity as to tempt man to forswear the past altogether and to rely upon their own creative faculty to invent something altogether new.

This is the other extreme of folly—for folly it is to think that our inherited traditions can be safely ignored, or that buildings which have stood the test of time and criticism have nothing to teach us. They are, on the contrary, as mines of wealth in which, digging deep, we shall unearth many a hidden treasure. They put before us problems—and their successful solution. They portray many various methods and effective combinations, suitable forms adapted to different materials, varied textures serving a definite purpose, and other elements of beauty and strength which, if not always entirely realised, are yet present as an ideal which we may all study with advantage and strive to express in our own work.

So I say to you, my youthful fellow-students, steer an even keel, if you can, between the Scylla of a superstitious and sentimental regard for the past and the Charybdis of a contemptuous indifference to all its works. If an example is merely old, leave it alone; if it is artistically good, approach it with all reverence, and examining its structure within and without endeavour to discover the secret of its charm, even as a bee extracts the honey from the flower. Do not make the mistake of supposing that you will necessarily be able to define the exact nature of the secret.

There are principles of architecture as absolutely reliable and yet as vague and ill-defined, as much "in the air," if you will allow the expression, as the laws which govern musical progressions or the methods which underlie true literary form. In no one of these cases can the subtle secrets of the art be distilled in the form of express and mechanical rules. If we desire that our own powers may be moulded and guided on true lines, we must, as it were, live in the storehouses, continually absorbing the spirit of the masters as embodied and expressed in their works. Centuries of experiment and criticism, generation after generation of trained perceptions and cultured intelligence, have gone to determine what is good, what is beautiful, what is true. Shall we throw away the results of all this? Rather let us recognise and admit that our knowledge should be based upon the experience of those who have gone before, and our taste trained and refined in the study of the cultured monuments of the past. As Professor Clausen has said in reference to paintings, "The work of our own times may lose its freshness and interest in a few years, while the older works still hold us with an increasing charm."

There are many ancient buildings in our own and every land which hold us with an ever-increasing charm—a charm attributable to their simplicity and self-restraint, their sincerity and directness of purpose, the straightforward and appropriate way in which they declare their object and intenton. Every such building will be found to possess a vitality of its own which, so far from ignoring traditional methods, has taken them up and carried them on a stage further. So now the proportions and values which have determined good effects in the past must hold good to-day. The needs of the time, it is true, call for special and characteristic expression; we may have to readjust, to combine afresh; but every new departure, if it is to be true and lasting, must take the old as its starting-point, the past as its basis, that which has been already accomplished as its foundation.

In all good work we shall discover a perfect blending of science and art, so combined that it is impossible to say where the one ends and the other begins. Where these are divorced there can be no true architecture. A steel-constructed building, for instance, cased with terra-cotta—or any other material for the matter of that—is not architecture at all. In studying a building this is the first test to be applied; this is the standard to which we must first submit it for judgment. Do not begin by sketching or noting merely surface decorations or artistic embellishments; rather take the details of construction as your starting-point. Note the size and bedding of the stones and the position of the joints—elements of beauty which are too often overlooked. Examine the methods of support and resistance, not thinking only what is necessary, but also how it satisfies the eye. Discover the scientific and mathematical problems which have been successfully worked out. Yet do not even in thought separate the science and the art of the building—the two are conjoined, and must be studied together and simultaneously.

The building must be solid and strong as well as graceful and pleasing. Stability is demanded no less than beauty. In fact, good construction, including the right use of materials, is a prime essential and the foundation of all excellence in architecture. Nowhere, I think, is this more forcibly demonstrated than in the career and work of Sir Christopher Wren, who, both by education and the bent of his youthful genius, seems rather to have been of the scientific and mathematical than of the artistic order of mind. Though, like all educated men of his day, he took an intelligent and cultured interest in architecture, he received no special training for such work. Wren took his degree at Oxford at the age of eighteen, became a Fellow of All Souls at twenty-five, and three years later was made a D.C.L. of Oxford and an LL.D. of Cambridge. Obviously it was not upon the ladder of architecture that he rose to these distinctions. As a matter of fact he was professor of astronomy at Gresham College, and in mathematics and astronomy he acquired for himself a European reputation. He was also President of the Royal Society in 1680. I have adduced these facts to show that though he undoubtedly possessed a very wide range of general knowledge, and was endowed with natural gifts of a wonderfully high order, all these were in the early part of his career directed to the practical side of life rather than to the artistic. His art was dormant; it was there, however, and he sometimes gave the rein to it a bit, for he is said to have invented mezzotint, or at least some improved method. It is interesting to speculate what it was that finally drew all his wonderful gifts and powers into the service of architecture. Whether the determining impulse came from within or without—probably a bit of each—I cannot doubt that it was the scientific or constructive side of architecture that attracted him in the first instance and that led him to accept an appointment as Assistant Surveyor-General of His Majesty's Works.

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In our own experience we find cases where we are much more impressed by the constructive beauty of a building than by any other feature in it. So there is an order of mind to which power and fitness of purpose appeal with unusual force, just as, again, a mathematical mind finds a fascination in the treatment of solids and voids, and of superincumbent masses.

The first important work entrusted to Wren in his new office will serve to indicate, not only the natural bent of his mind, but also the official appreciation of it on the part of the authorities. He was set to examine and report upon St. Paul's Cathedral, which it was feared was in a dangerous condition. It is evident from the report that he did his work thoroughly—the very first thing he did was to measure the whole building carefully—and the insight and experience that he thus gained in constructive work stood him in good stead afterwards. With respect to the roof he says: "It is evident by the ruin of the roof that the work was both ill-designed and ill-built from the beginning—ill-designed because the architect gave not abutment enough to counterpoise and resist the weight of the roof from spreading the walls. . . This also may be safely affirmed not only by an architect taking his measure from the precepts and examples of the ancients [you see he advocated this], but by a geometrician (this part being liable to demonstration), that the roof is and ever was too heavy for its abutment; for the eye alone will discover to any man that those pillars, as wide as they are, even 11 ft. diameter, are bent outward at least 6 in. from their first position. . . The bending of the pillars was facilitated by their ill-building, for they are only cased without, and that with small stones . . but within nothing but a case of small rubbish stones and much mortar which easily crushes and yields to the weight."

Good old times those! Jerry-building is obviously not a very modern institution. Then, too, Wren's first problem in building was a constructive one, for in the wonderful roof of the Sheldonian Theatre at Oxford, which has a span of 68 ft., the scientific construction is masterly, and brought him great reputation. Two years later, viz., in 1665, occurred the Great Plague, and Wren took the opportunity to pay a visit to France to study architecture as a fine art. In Paris he studied all the principal buildings, and became intimate with the most celebrated artists there. He was introduced to Bernini, who showed him his designs for the Louvre, for which he says in his Notes he would have given his skin. The old Italian would not let him study it long, and he says he only had time to "copy them in his fancy and memory and shall be able by discourse with a crayon to give a tolerable account of it." He also studied Fontainebleau, St. Germains, and Versailles. Of the last-named he says: "The mixtures of brick and stone, blue tile, and gold make it like a rich livery—not an inch within but is crowded with ornament." Wren's own work was subsequently distinguished by its colour effects and contrasts of texture. He adds, in the letter from which I have already quoted: "The women as they make here the language and the fashions, and meddle with politics and philosophy, so they sway also in architecture. Works of 'filgrand' and little trinkets are in great vogue; but building ought certainly to have the attributes of eternal, and is therefore the only thing incapable of new fashions."

These words coming from the man who advanced the architecture of the Renaissance to such a pitch of excellence and succeeded in establishing an English tradition fine in type and grand in scale—the importance of these words, I say, as a guiding principle for the student cannot be over-estimated.

I hope I may be pardoned for quoting so freely from Wren, and for enforcing my points by the history of his career; but his methods of study and the line of his development are so clearly before us that I am sure we may draw many useful lessons and suggestive hints from them.

In conclusion I will briefly recapitulate some of these points. That which I have especially endeavoured to impress upon my brother students this evening is, that in addition to the ordinary architectural curriculum there must be a systematic and continuous study of buildings that are worthy, both ancient and modern. We must live in an atmosphere of art, breathe it in at the very pores of our skin, as the phrase goes, that it may act upon our own mental soil and render it productive. This fertilisation will be immensely stimulated if, to continue the figure, we plough up the ground with hard thought. "Hard thought," this is one of the great secrets of good architecture—hard thought not only in the problems submitted to us for solution, but in our study of examples. Without such thought we shall sink into mere copyists or adapters of a few stock-in-trade types, having no affinity to the thought of the time or the purpose of the building; in other words, our art will cease to live and grow. I have also urged upon you the importance of laying a good foundation in a practical knowledge of the art of construction and the right use of materials.

This is the only solid, reliable basis for our art. Without such knowledge the keenest appreciation of the beautiful may be only thrown away; at the very best it is for ever fretting against the limitations and restrictions with which it finds itself encompassed. But if the practical, scientific foundation is well and truly laid, how great, how delightful, the field that opens up before the artist! His very fetters become his servants; the goad of the taskmaster becomes in his hand a tool for the accomplishment of all, and more than all, that his eye had conceived or his fancy dreamed of. Let our ultimate ideal be the realisation of those moral principles which are the dignity and power of architecture as they are of life—viz., simplicity and self-restraint, sincerity and directness of purpose. Without these we cannot but fail; with these we may accomplish something worthy of our art, and leave behind us work that shall be honourably charateristic of our time.

Criticism of the Students' Drawings.

The Chairman said there was nothing more valuable to the artist than real honest criticism, and he thought the students would appreciate the remarks about to be made by Mr. A. N. Prentice in regard to the works submitted for the prizes and studentships this year.

Mr. Prentice then dealt with the various drawings, and, in the course of his remarks, he said that, generally speaking, the standard of excellence was well maintained, and he was glad to note that the prizes were competed for in increasing numbers; although it was somewhat surprising, considering the large number of architectural students in this country, that such a very small proportion come forward. Take the Owen Jones Prize, for instance: only three gentlemen had responded He hardly thought students appreciated the vast amount of good these studentsbips do for them; to many it had been one of the stepping-stones of their lives. In his criticism he proposed to deal first with the drawings and studies of old work; and, secondly, with the designs—the ultimate end and aim of all these studies. He had always considered that a facility to draw well was the first makings of a great architect. Did not Michael Angelo impress on his pupils the importance of continually drawing? He knew good drawing was not deemed of any great importance amongst some architects, but a visit to the gallery of the Alpine Club was sufficient testimony that the students think otherwise. In speaking of the drawings for the Silver Medal and 10 guineas, he said he should like to impress on the students that, while he was glad to see so many recognise the importance of measuring old work, the artistic rendering of an important subject should by no means assure them the prize. He would also impress on students the essential importance of a methodical method of measuring up the buildings they had selected. Year after year the Committee (who gave very careful consideration to the original surveys) were horrified, he was told, to see the scrappy, haphazard, and unconvincing methods adopted by many of the competitors; and in awarding the prize the Committee were largely guided by the surveys which indicated the most careful and thorough investigation and study of the buildings. Having dealt with the drawings, Mr. Prentice turned to the second part of the subject, viz., the designs. What could be more delightful, he said, than to be untrammelled by cost in working out one's ideas on paper? The pleasure of indulging in one's extravagances and fancies must be very pleasing. "Do not restrain yourselves if you want to win the prize; put in all you know. An unsuccessful competitor sending in for the first time for the Soane Medallion will probably be impressed at the display of the prize-winner, but it will be an incentive to him to higher ideals next time. Therefore, design in the grand manner, but, as a word of warning and as a matter of the greatest importance, try to make your building represent what it is intended for. A Roman bath can never be mistaken for a hotel lounge, nor a warehouse for a Royal palace. Symmetry of design should be aimed at to get a dignified effect; avoid equal divisions of floors and string-courses; and, finally, start with the plan before beginning your elevations. The designs this year for the Soane Medallion are of an exceptionally high order. A design for a Royal palace is a very good subject."

Professor Beresford Pite said he had great pleasure in asking them to express their hearty thanks to the President for his address, and to Mr. Prentice for his criticisms. He could scarcely trust himself to speak of Mr. Belcher's address; he was in the happy position of finding in it nothing new to him, but everything that he believed to be absolutely true, and he most cordially and heartily recommended the careful study of it to the student. One knew how easily these addresses, which were somewhat general in their character, were forgotten, but he urged them not to forget the address delivered that night, but to take the opportunity of frequently referring to it if not of storing their minds with it. There were few things more perplexing to students, he took it, than the difficulty of trying to appreciate what to do, what to see, what to sketch when a student found himself in such a place as Florence for the first time, or in Rome, or further afield, as students were now doing. The wise and earnest and carefully thought-out address they had heard that night would to such students be a very valuable guide. Their thanks were also due to Mr. Prentice for so carefully going through the drawings and giving them his interesting notes. He (the speaker) always cherished the conviction—the certain conviction—that there were qualities in the unrewarded designs which far excelled the qualities which had appealed to the adjudicators. On that point he could, with long experience, speak with some conviction, and, speaking to those who were not among the honoured that evening, he would say, "Comfort yourselves with that divine hope that the assessors have been blind to some of those special qualities which are strong in your work. Whatever happens, do not be discouraged. There is absolutely nothing to be discouraged about in having made a great effort, and in having obtained the opportunity of such an exhibition as we have had this year. Such labour is not thrown away." He had another conviction, *i.e.*, that all the best designs were made out of office hours—"they smelt of the midnight oil; they have taken the place of the tennis-court, the cricket and football fields for the time being." He did not think that a student attained to a satisfactory success unless the whole of his mind was put in his work. And a student should not grumble if, owing to a course of study somewhere, he did not have the opportunity of competing for the Institute prizes. "Make up your mind that when your course is up you will go in for them. You will often feel discontented with your design, but, nevertheless, go on with your attempt." He should like to make a suggestion as to the Pugin Studentsbip and the measured drawings. The conviction had come to some of them that the time had come for a reconsideration of the conditions of the Pugin Studentship. "We see, year after year, this vast amount of labour and care expended in the production of sketches, and there the matter ends. The successful student is congratulated for his drawings and his successful tickling of the assessor's fancy, and he embarks on another two months of reckless sketching, and comes back. The Institute is no richer, the student, though happier, is not wiser, and again and again the process is repeated." If the Institute would predicate every year the task to be followed by the successful student—would indicate to him some era of English mediæval art—and would define its character—domestic, ecclesiastic, castellated or the general architecture of some district, or of some material, and would embody the students' studies in a report, which might be published periodically—in course of time they would obtain a complete collection of drawings and studies. How much more might he not claim that a reconsideration of the conditions for the measured drawings competition was desirable? Year after year sheaves of valuable measured drawings were brought there and then disappeared. The Institute did not claim them—the limited accommodation had something to do with that—but he thought they might be filed and kept as

records. These drawings often became a nuisance to students, and they were left about until they became dirty and got spoilt, but if the Institute kept them they would remain as valuable and accurate records of valuable and interesting buildings. He could not help looking forward to the day when this simple reform would be made. The President's remarks on the subject of modern design were extremely valuable. He would urge that the design prizes of the Institute perhaps suffered a little in quality because the students were led into paths in which they could not walk in the course of their education. There were hints in Mr. Prentice's criticisms of the mixing up of basilicas with hotel lounges, showing that the students were at sea in their subject. The ceaseless studying of the subjects suggested was a mistake. If they had a lounge once in ten years or a royal palace every half century they would get to the practical point of architecture, and he would suggest that it would be for the benefit of architectural art of the country if plainer subjects were taken. Why not take a simple brick subject like a poor law workhouse—a building which the charity of the nation provides for the poor. Or let them design their own house, if they wanted to find a mean between a royal palace and the workhouse. Let them become frank in their acceptance ot modern facts. He did not think that there was anything more important than that the student should be brought face to face with facts rather than fancies. Archæology was a proper field fo an architect's study, but that sham antiquarianism which bought sham old furniture and decorated houses with it was to be deprecated. The archæology which made them inquire as to the reason for a joint in an old building, or why a stone was cut, and wish to understand it, was valuable to them and interesting, and that was what they wanted in their designs. They must take modern facts and requirements, and apply them to the subject in hand. Under these circumstances there might arise, late, it was true, but one hoped for it, an enthusiasm for that which is present and actual and modern, and towards which architects, of all others, ought to strive.

Professor Lethaby, in seconding the vote of thanks, said he could not help recalling that some twenty-five years ago he had marched up to that table to receive a prize. He congratulated the Institute on having obtained this year such a very interesting and valuable series of drawings, and also the students who had made them. They could not but be struck with the enormous amount of earnest and thoughtful labour which had been spent on the drawings. Further, he should like to express his own personal pleasure in seeing that some unusual types of building had been taken for study, especially the Turkish mosques — one of the latest flowers of eastern thought. They were perfectly direct examples of engineering, and undoubtedly most marvellous examples of simple equilibrium. They were extraordinarily real and vital, and were welcome, not only for the merit of the subjects in themselves, but from the fact that the choice of these outside subjects tended to break up that widely spread notion that so many of us had in our youth, *i.e.*, that architecture was in some curious way dividable into Classic and Gothic schools. The more we study these other forms and expressions of art—not merely for themselves but to see what they can give us—we should see that from the earliest days to the latest there were no sharp divisions of style; that all building was one progression from the beginning to the end.

Professor Pite then put the vote of thanks, and it was very heartily agreed to.

The President, in reply, said he hoped that some of the suggestions they had heard might eventually be carried out. He thought it was important they should take up the study of ancient buildings in a systematic way, and while he had no objection to archæology as a study, his desire was that it should not mislead them, but that they should endeavour to sketch in the spirit indicated by Professor Pite, and inquire why a joint comes in a certain place and why a stone is so cut. They should reason out the why and wherefore of the problems they saw before them.

Mr. Prentice having briefly replied,

The President distributed the prizes and studentships to those who were successful in the recent competitions. A full list of the successful students appeared in our issue for January 28.

The President, in handing the prize to Miss Charles for her essay on "The Development of Architectural Art from Structural Requirements and Nature of Materials," said he had quoted Sir Christopher Wren's remarks on the bad influence of the ladies in France, and he was glad he now had the opportunity of presenting the medal to Miss Charles. If Sir Christopher were there he would be proud and pleased to find how admirably some ladies in this country advanced our art.

The President announced that the next meeting will be held on February 20, when Mr. Reginald Blomfield has undertaken to read a paper on "Architectural Education."

The meeting then terminated.

LONDON BUILDING ACTS (AMENDMENT) BILL.

On Monday morning, at the Westminster Palace Hotel, a conference of local authorities convened by the Royal Borough Council of Kensington was held to consider the London Building Acts Amendment Bill. The Mayor of Kensington was voted to the chair and the Town Clerk of Kensington was elected hon. secretary of the conference. All the borough councils were represented.

Major Isaacs said the proposed Bill was so important that they ought to at least pause before they consented to it. The Bill contained 184 clauses and three schedules, and it was to be read conjointly with the parent Act of 1894. But, if this Bill was passed, it would be an amending Act upon an amending Act. The Bill of 1894 was amended by a Bill which came into operation in 1898, and, if they had to read the new Bill in conjunction with two previous Bills, it was almost impossible to construe what the Act would mean. Many leading solicitors had expressed the opinion that it was next to impossible to get at the meaning of the Bill. To come to the Bill itself, by section 9 it was intended to make the minimum width for new streets 50 ft. instead of 40 ft. He was for five years in the office of a district surveyor, and he had seen miles of streets laid out at a width of 40 ft. which were intended for houses to be inhabited by those who were not overburdened with wealth. He unhesitatingly said that 40 ft. width was sufficient for houses not more than 40 ft. high. The great point, however, was that the land for the increased width was to be given by the owners of the estate, and this would be a punishment on all those engaged in building operations in London. Everyone would agree that the building of huge blocks of flats was not likely to continue in London, for it was found that life in flats was accompanied by a good many difficulties. Clause 31 also gave the Council the opportunity of setting the building line back and making a road the enormous width of 100 ft. They would agree that the Bill went too far with regard to width of streets, particularly having regard to the fact that the landowner was to give the land without compensation. Part IV. of the Bill had reference to the naming and numbering of streets, and, so far as that part was concerned, his sympathies were with the Bill. Part V. was very important, for it referred to the open space about buildings and the height of buildings generally. Clause 45 prohibited the erection of warehouses upon sites upon which the erection of dwelling-houses would be illegal, and that was a very important alteration, having regard to the fact that, owing to the congested state of the City, it was becoming necessary to go outside the City to erect warehouses. It was a clause of a very drastic and far-reaching character, and would affect the eastern portion of the City especially. As to the clauses dealing with the widening of courts, etc., it seemed to him idle for the County Council to hope to get the land to widen the courts and alleys running out of Fleet-street, for instance, unless they were prepared to compensate the owners of the land. Part VI. of the Bill related to construction, and contained clauses of so technical a character that it could not be discussed by that conference. He thought it would be well if a committee possessing the requisite technical knowledge should look into this part of the Bill and see if they were proper. Part VIII. dealt with the means of escape in case of fire. In common humanity, they must allow the provisions to be as wide as possible in regard to this, but at the same time they must see that the clauses did not contain provisions which would make building impossible. He believed there would be no desire on the part of those engaged in the building trade to oppose anything which was reasonable. Part IX. dealt with party walls, etc., and there was a new definition given of a party wall which required close attention. Part XII. related to the erection of dwelling-houses on low-lying land, and that, he considered, was a proper provision. Part XIII. defined the powers and duties of the superintending architect and district surveyor, and would probably lead to discussion as to why London should be treated differently with regard to the supervision of buildings than the other large cities and towns of the United Kingdom. In other large towns like Liverpool and Manchester they could go to one office and find out all that was required to proceed with a structure; they could find out the depth of the sewer and the line of building frontage, and get from the engineer all that was necessary to enable them to go along with a building without trouble; but in London, after they had taken the trouble to see the Borough Engineer, they had also to consult the district surveyors. He asked if it was necessary or desirable that there should be this division of authority. Why should they in London be put to the trouble and expense consequent upon such a state of things? Could they not make the voice of such a representative conference heard so that the London County Council might be induced to withdraw their Bill? If a new Building Act was necessary, could not the London County Council draft a measure which would include the parent Act of 1894 and the amending Act of 1898, and anything else that was desirable, so that they might have in one volume everything relating to the matter? He moved:—"That the provisions of the London Building Acts (Amendment) Bill are of such a drastic and complex character, and if passed into law would be found so unintelligible and unworkable, that it is desirable that the Bill should be withdrawn."

Mr. W. Emden (Westminster) asked if the mover would accept words to the motion recommending that a Royal Commission be authorised to inquire into the whole subject.

Major Isaacs said he could not accept that.

Mr. R. M. Prescott (Town Clerk, Fulham) asked if the following words would be accepted as an addition:—"Or, if not withdrawn or substantially amended, shall be opposed."

The mover agreed to accept these words, and Mr. Prescott seconded the motion.

Mr. W. Emden said the Bill was of a highly technical nature, and required to be dealt with by the best man with technical knowledge in the country. This Bill had been framed by the County Council, whose technical knowledge was extremely small. There was no one on the London County Council of standing in the architectural profession who could carry weight in dealing with such a matter and who could carry confidence with them in what they did. The Superintending Architect of the L.C.C. was, of course, a man of considerable ability, but his career had been in the Admiralty and his training was not that which made him competent to frame such a Bill. He agreed that the London County Council was a proper body to make suggestions, but the Borough Councils were also competent bodies to make suggestions, and he contended that they should all give evidence before an expert committee.

Mr. H. H. Collins, F.R.I.B.A. (Paddington), said that he did not come in his official capacity as a City Surveyor, although he had been retained in his professional capacity by the City of London to oppose the Bill. As a past-president of the District Surveyors' Association, he had taken a great deal of interest in the matter, and was engaged for seventeen days when the 1894 Bill was before Parliament. He considered the Bill was a crude measure, and the clauses did not seem to have been considered at all, either by experts or non-experts. At the same time, there were many desirable things in the Bill, and it was a thousand pities that the London County Council should not bring the matter before experts and withdraw those provisions which he believed would destroy the Bill. It appeared to him that a great deal of the work might be left in the hands of the Borough Councils, who knew best what their own localities required. It was absurd to have a general Act equally applicable to the City and the rest of London, for the City stood by itself, and they in the City knew best wha they required. In Westminster, again, they had large blocks of offices and flats, and knew what they required, and Kensington, again, which was a residential district, knew its own

requirements. One of the worst features of the Bill was its retrospective action. It proposed to affect existing property, and anyone who knew anything of leases and mortgages, and so on would know that it would prevent building altogether by preventing financial transactions being carried through. Then there was no finality in the Bill, and the County Council proposed to exempt their own buildings from any restrictions at all. He knew that the District Surveyors' Association had had numerous examples come before them where the greatest wrongdoers had been the London County Council. Then, with regard to the Tribunal of Appeal, they said that no architect should be on the Tribunal who was a practising architect. Evidently the County Council wanted someone on the Tribunal who knew nothing about the subject. With regard to some of the proposals in the Bill in respect of street widenings, their application would mean the taking away from owners of sites in the City of enormous value.

Mr. C. W. Matthews (St. Pancras) said there were many in the room who felt that the Bill contained good clauses, and who would give support to it if it were substantially amended.

Mr. Tagg (Town Clerk, Camberwell) remarked that, while there were many clauses in the Bill which the Council would reject, there were others, such as regarded the provisions as to fire and the re-numbering of houses, which they would like to see in force at the earliest opportunity. He thought they might easily arrange with the County Council that some of the clauses should go through unopposed. It was in the outlying positions of London that they felt the need of an Act, for they found many clever architects and builders who knew how to get round the 1894 Act. He wanted powers to deal more especially with these architects, and so prevent overcrowding of houses and danger of loss of life by fire.

Mr. J. W. Lorden (Wandsworth) pointed out that the conference represented the local authorities, and they ought specially to consider the whittling away of what little powers they now had. Another serious matter was the delay which would occur before building operations could be commenced, for the Bill gave the County Council "such reasonable time as is practical" to consider applications.

Mr. Pearsall (Hampstead) thought the passing of the resolution would be futile. The County Council had invited the Borough Councils to send in suggestions, and no doubt they had. They in Hampstead were anxious to have considerable alterations made in the Building Act. He hoped the conference would consider the Bill in detail and make suggestions for its amendment.

Mr. Whur (Paddington) moved, as an amendment, "That the Bill be either withdrawn or else opposed," and for this 37 voted and 19 against. The amendment was carried as the substantive resolution.

Major Isaacs next moved: "That, inasmuch as the London Building Act of 1894 is already complicated by the amendments of the Act of 1898, this conference is of opinion that a new Building Act for London, superseding the present Act, should be formulated, and that before the Bill is drafted the views of the London County Council, the Corporation of the City of London, the Councils of the City of Westminster and the several Metropolitan Boroughs, and the various professional associations connected with building work should be ascertained and considered."

Mr. W. Emden (Westminster) said that, while he was quite in sympathy with any reasonable requirement being made with regard to fire, he did not think they ought to neglect the larger question. They were all desirous of having a complete end of the matter. The Building Act of 1855 was not altered until 1878, and then more particularly with regard to the protection of theatres from fire, and in the main the 1855 Act stood till 1894. In 1894 the County Council framed a Building Act, and it had not been in operation ten years before they wanted to make drastic alterations in it. He was quite prepared for certain amendments of the present Building Act to be carried, but it was necessary to have something like finality, and that could only be arrived at by having a Royal Commission composed of experts before whom experts could give evidence. To-day, in London, they had to go to one Committee of the County Council to get the plans passed, and to another to deal with exits and entrances, and another with regard to sewage, and so on. They found contested points between the local authorities and the County Council, and those who wanted to build were made the shuttlecocks between the contending parties. He felt that the only remedy was to get the Building Act properly codified, and he moved that after the words "formulated" the following words be inserted: "After the matter has been considered by a Royal Commission, and also that the Royal Commission should consider the drafting of a Bill which shall codify the whole of the building law in London."

Mr. Whur (Paddington) seconded the amendment.

Mr. J. Lewis (Marylebone) expressed the hope that whatever was done they would not ask for a Royal Commission.

The amendment was carried by a large majority, and the motion as so amended was agreed to.

Major Isaacs (Kensington) moved: "That in any new measure the London County Council should be relieved as much as possible by transferring to the City and Borough Councils all duties that can be efficiently discharged by those bodies in accordance with the views expressed by the Royal Commission in 1894."

The motion was carried without discussion.

Mr. A. B. Bryceson (Town Clerk, Woolwich) moved: "That, with a view to promoting uniformity of procedure on the part of those Borough Councils opposing the Bill, a committee be appointed to prepare a draft form of petition against the same, which, if thought expedient, may be adopted, and also to watch the proceedings so as to advise the conference as to any further action which may be needed."

This was agreed to, and it was also decided that each Borough Council should be asked to send a representative to form a committee. The following gentlemen were chosen as a subcommittee to draft the petition:—Messrs. Morton (City), Prescott (Fulham), Bradley (City Engineer, Westminster), Bryceson (Woolwich), and the Mayor of Kensington.

It was also resolved that copies of the resolution be forwarded to the Prime Minister, the First Lord of the Treasury, and the President of the Local Government Board.

SCHOOL HYGIENE.

A CONFERENCE on school hygiene, organised by the Royal Sanitary Institute, was opened on Tuesday at the London University, South Kensington. In connexion with the conference there is an exhibition of school building and sanitary appliances in the great hall of the University, and here a reception of delegates and members took place. They numbered about 600.

The Duke of Northumberland, as President of the Royal Sanitary Institute, took the chair in order to instal Sir Arthur W. Rücker, Principal of the University of London, as President of the conference, and to call upon him to deliver his presidential address. After explaining the purpose of the conference and acknowledging the services of the Royal Sanitary Institute to the public health, the Duke said they were particularly fortunate in securing as their president the Principal of the University of London. It was through our universities and colleges, and especially their training colleges, that they must look for the advancement of hygiene, and when the Principal of the University of London took the lead they might look with confidence to others following at a respectful but, he trusted, not very distant interval.

Sir A. Rücker then took the chair and delivered an opening address on the co-ordination of the teaching of hygiene. He said he took his appointment to the presidency as a proof of the importance the conference attached to the place of hygiene in any well-considered scheme of education. Amid the welter of conflicting opinions the subject in which that conference was chiefly interested had been steadily making its way to a position of more importance in educational curricula. Sanitary science had long occupied a relatively prominent position in this country, so that now the determination with which we insisted on sanitary precautions struck the foreigner with amazement. Average English opinion would not agree that in sanitary regulations the State or local authorities had outstepped the limits of their legitimate functions. But where there was not the same unanimity, as in the case of building laws, he deprecated risking reaction by moving too far in advance of public opinion. He gave reasons for assurance that the claims of hygiene in elementary school education were being widely recognised, but observed a curious difference between the official theory of the Board of Education as to what was desirable in elementary schools and the practice followed in the education of the richer classes. He believed in the study of the elements of science, hygiene included, being carried on side by side with the study of language and arithmetic from a very early stage. He discouraged a too exclusive reliance upon compulsory examinations in the promotion of the study of hygiene, and defended the new system of the University of London against the supposition that in abandoning a particular method of enforcing its views it renounced its right to express opinions as to what was desirable in education or to use more legitimate methods of giving effect to them. He described and approved the Government regulations for training of teachers in hygiene, but regretted the small number of responses to the Sanitary Institute when it offered advice as to the preparation and working out of schemes under these regulations. The magnificent gift of the Goldsmiths' Company to the University of London was to be utilised, in part, for the training of teachers for elementary schools. In the scheme of education there hygiene would form an essential feature. The knowledge of school hygiene was required by authorities granting diplomas of education. He looked to the success of their endeavour for the reasonable cultivation of the study of hygiene not to its figuring in the list of subjects for matriculation, but to the steady pressure of opinion. They would insist, as they had insisted, that the elements of education should include not merely the study of other forms of life, but some knowledge of the dangers by which they were surrounded and of the means of keeping them at bay. They would insist that those to whom young lives were entrusted should have learned, as part of their business, the main outlines of hygienic science; and in extending their influence farther than it had already reached they would go forward with the consciousness that in a very short time the merits of their cause had already attained an amount of general acceptance which was as hopeful as in educational controversies it was rare.

On the motion of the Bishop of Wakefield, seconded by Sir Aston Webb, thanks were voted to the President for his address. A similar compliment to the Duke of Northumberland for his part in the initiation of the conference was passed on the motion of Sir W. Church, seconded by Mr. W. Whittaker, chairman of the conference committee.—Sir Lauder Brunton presided at Wednesday's deliberations on the subject of "Scholars."

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. J. Williams Benn, M.P., Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend Fulham Borough Council 5,695*l.* for paving works, and Hammersmith Guardians 3,050*l.* for poor law purposes (board room and offices, etc.). Sanction was also given to the following loans: Hampstead Borough Council, 11,482*l.* for housing purposes and 4,335*l.* for electric lighting purposes.

Works Department.—On the recommendation of the General Purposes Committee it was agreed that the following be a standing order of the Council:—

"The accounts of the cost of all works executed by the Works Department shall be kept by a Works accountant, whose office shall be at the Works Department, Belvedere-road, but who shall eport direct and be responsible to the Works Committee for the accounts and, subject to general supervision by the manager of Works, for his staff."

The Main Drainage Committee recommended, and it was agreed, that the estimate of 10,000*l.*, submitted by the Finance Committee, be approved; and that expenditure not exceeding that amount be sanctioned on account of the cost of the construction of the portion of the southern high level sewer No. 2, between Plumstead and Catford, and of the acquisition of property and compensation in connexion with the said works.

Holborn to Strand Improvement.—On the recommendation of the Improvements Committee that a lease be granted to a French syndicate for a site between Aldwych and the Strand, for the purpose of erecting a French

theatre, restaurant, art galleries, and industrial exhibitions,

Mr. Davies, the chairman of the committee, asked that the whole matter might stand over for a week.

This was agreed to.

Vauxhall Bridge.—The Bridges Committee reported as follows :—

"On July 5, 1904, and on January 24, 1905, we reported on the slow progress made by Mr. C. Wall under his contract for the erection of the superstructure of Vauxhall Bridge. We consider that the progress made has been by no means satisfactory. The contract was accepted by the Council on October 20, 1903, but the formal order to commence work was not given until January 1, 1904, as we desired to give the contractor a reasonable time within which to make his preliminary arrangements. The time fixed for the completion of the work under the contract is two years from the date of the order to commence, and the bridge should therefore be completed by December 31, 1905. From the first, however, our attention has been frequently drawn to the unsatisfactory progress made by the contractor, who decided to build and erect the steel ribs himself rather than sublet this portion of the work to a firm experienced in work of this description and having adequate and proper plant to complete it within the specified time. It has been pointed out to us that one of the principal causes of the delay is the lack of adequate and up-to-date contractor's plant at the bridge. Notwithstanding the fact that the contractor's attention has been drawn repeatedly to this fault, Mr. Wall has not appeared to be at all willing to remedy the omission. In our opinion another reason for the delay is to be found in the failure of the contractor to appoint a proper agent to be in charge of the works as required by clause 24 of the contract. The contractor's representatives on the works are unable to carry out the orders of the Council's officials without reference in every case to Mr. Wall. The absence of a proper agent, with full powers to act on behalf of the contractor both at the bridge and at the contractor's works at Grays, in Essex, casts upon the Council's officials additional work with which they should not be required to deal. The appointment of such an agent would also facilitate the co-ordination of the work in the several sections of the contractor's staff, the absence of co-ordination having been due, no doubt, to Mr. Wall being compelled to give his attention to his other contracts. The value of the work executed up to date at the bridge is approximately 28,547*l.*, or little more than 24 per cent. of the contract sum, not including provision money, while thirteen months out of the twenty-four fixed by the contract have elapsed. Even allowing for the amount of the work done at Mr. Wall's yard at Grays, the progress made in the erection of the superstructure gives no hope that the work will be completed until long after the period fixed by the contract. The delay is a serious matter to the Council, and will involve actual financial loss, as the linking up of the Council's tramways on both sides of the river at this point will be deferred owing to the slow progress of the bridge works. We consider that the Council should draw Mr. Wall's attention to the serious delay, and that he should clearly understand that in the event of the work not being completed within the specified time penalties will be enforced. The penalty provided in clause 36 of the contract is 100*l.* for each week the work is delayed after the specified time. We recommend—That, having regard to the terms of the contract between the Council and Mr. Charles Wall for the erection of the superstructure of Vauxhall Bridge, the attention of the contractor be drawn to the serious delay which has occurred and is occurring in the carrying out of the works, and that the Council do inform Mr. Wall that, unless the work is satisfactorily completed within the time specified in the contract, the Council will enforce penalties."

After considerable discussion the recommendation was agreed to.

Non-Inflammable Scenery.—Mr. Yates, the Chairman of the Theatres and Music Halls Committee, in reply to Sir Algernon West, said a rule was adopted some time ago that all scenery should be rendered non-inflammable, and the committee sent out a circular to all licensees ordering them to carry out that recommendation. He regretted, however, to say that these instructions had not been carried out as well as the committee wished, and in a report which was being prepared the individual cases of failure to comply would be set out.

Opening of New Theatres.—The Theatres and Music Halls Committee drew attention to the practice which obtained with regard to the opening of new theatres and music-halls. It was the custom for the person for whom a new theatre or music-hall was being erected to fix, many months beforehand, a date for the opening of the premises. Contracts with artists were entered into, and all arrangements definitely made for opening on this date, which was often decided upon without due regard to the exigencies of construction. It almost invariably happened that when the advertised date of opening approached the building was in an unfinished condition, and it was only by working night and day that there was any possibility of getting it sufficiently finished for the Council to issue a certificate to enable it to be opened at the advertised time. The result was that the Council was asked to certify the building the moment it was completed, perhaps only a few hours before the advertised time for opening. After reporting on what had taken place during Christmas as to five places of entertainment, which had been either newly erected or reconstructed, the committee concluded: We think the Council will feel that the state of things which now generally obtains should, if possible, be altered, and that sufficient time should elapse between the completion of a building and the date upon which it is desired to open it for public entertainments to allow the Council's officers to survey the premises and report to us, and for us to make an inspection if necessary. We purpose informing owners in future that they must make such arrangements as will enable this to be done.

The Council adjourned at seven o'clock.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses :—

Lines of Frontage and Projections.

Fulham.†—Buildings upon the site of Nos. 327 to 343 (odd numbers) inclusive, North End-road, Fulham (Messrs. Jones Brothers).—Consent.

Battersea.†—A building at No. 33, Park-road, Battersea (Mr. E. S. Underwood for Messrs. Aplin & Barrett and the Western Counties Creameries, Ltd.).—Consent.

Clapham.—Two houses on the western side of Rodenhurst-road, Clapham, to abut upon the northern and southern sides of Hambalt-road (Mr. T. Ward).—Consent.

Battersea.—Additions to the Battersea Town Hall, Lavender-hill, Battersea, to abut upon Town Hall-road and Theatre-street (Mr. T. W. A. Hayward for the Council of the Metropolitan Borough of Battersea).—Consent.

Hammersmith.—A projecting clock at No. 4, Shepherd's Bush-green, Hammersmith (Major Berthon for Messrs. Sainsbury Brothers, Ltd.).—Consent.

Lewisham.—Porches and barge boards at 1 to 12 (inclusive), Tannsfeld-road, Sydenham (Mr. A. Cooper).—Consent.

Lewisham.—A pent over the entrance to a house adjoining "Oakdene," Canonbie-road, Lewisham (Mr. W. Preston for Mrs. Browne).—Consent.

Marylebone, East.—A projecting balcony, and projecting stone heads to a door and window under such balcony, at No. 32, Cavendish-square, St. Marylebone (Mr. W. H. White for Mr. W. A. Poole).—Consent.

Westminster.—A one-story shop on part of the forecourt of No. 121, Victoria-street, Westminster (Mr. M. T. Meredith for Mr. M. Power).—Consent.

Dulwich.†—An iron and glass covered-way at No. 144, Croxted-road, West Dulwich, to abut upon Turney-road (Mr. F. N. Kemp for Mr. R. Downing).—Refused.

Islington, South.—A one-story shop and gateway at No. 363, Liverpool-road, Islington (Mr. H. O. Ellis for Mr. Curry).—Refused.

Paddington, South.—The retention of an iron and glass covered-way at No. 15, Porchester-terrace, Paddington (Messrs. Napper & Sons for Captain Dundas).—Refused.

Dulwich.—An iron and glass covered-way on the forecourt of "The Arlington" dancing academy, No. 80, Peckham-road, Peckham (Messrs. J. A. J. Woodward & Sons for Mr. W. F. Hurndall).—Refused.

Width of Way.

Hampstead.†—The retention of a brick petrol store at "Northcroft," College Villas-road, Hampstead (Mr. W. Scott).—Consent.

Lewisham.—A church upon the site of Nos. 211 and 213, Sydenham-road, Lewisham, with a boundary fence at less than the prescribed distance from the centre of the roadway of Laurel-grove (Mr. R. Curwen for the trustees of the Lower Sydenham Wesleyan Church).—Consent.

St. Pancras, East.—That the application of Mr. T. B. Westacott for an extension of the period within which the erection of a two-story building on the north-east side of Rochester-place, Camden Town, was required to be commenced be granted.—Agreed.

Bethnal Green, South-West.—Buildings on the eastern side of Brady-street, Bethnal Green, to abut also upon Dagnall-place (Mr. A. P. Stokes for Mr. R. E. Seward).—Refused.

Paddington, North.—A building on the south-east side of No. 1, Warwick-place, Paddington (the Metropolitan Electric Supply Co., Ltd.).—Refused.

Line of Frontage and Space at Rear.

Battersea.†—An addition at the rear of No. 127, St. John's-hill, Battersea, to abut upon Vardens-road (Messrs. J. A. J. Woodward & Sons for Dr. Wonnacott).—Consent.

Lines of Frontage and Construction.

Hammersmith.—That the application of Mr. I. Kiralfy for an extension of the period within which the erection of a gangway over Wood-lane, Hammersmith, was required to be commenced, and an extension of the period within which such gangway was allowed to be retained, be granted.—Agreed.

Norwood.—An iron building upon a site abutting upon Acre-lane and Brixton-hill, Norwood (Messrs. Humphreys, Ltd., for the London Evangelistic Council of Exeter Hall).—Consent.

Space at Rear.

Lewisham.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building at No. 235, Hither Green-lane, Lewisham, with an irregular open space at the rear (Mr. P. J. Black for Mr. E. Willson).—Consent.

Hammersmith.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of three houses on the east side of Willow-vale, Uxbridge-road, Hammersmith (Mr. A. G. Channer for Mr. J. Watts).—Refused.

Formation of Streets.

Lewisham.†—That an order be issued to Mr. R. Stewart sanctioning the formation or laying out of new streets for carriage traffic to lead out of the west side of Birkall-road to Dowanhill-road, Lewisham (for Mr. A. Cameron Corbett).—Consent.

Wandsworth.—That an order be issued to Mr. E. S. Trehearne refusing to sanction the formation or laying out of new streets for carriage traffic on the Templeton House Estate, Priory-lane, Roehampton.—Refused.

Means of Escape From the Top of High Buildings.

Strand.—Means of escape in case of fire proposed to be provided in the Waldorf Hotel, Aldwych (Messrs. A. M. Mackenzie & Son for the Waldorf Syndicate, Ltd.).—Consent.

Dwelling-house on Low-lying Land.

Rotherhithe.—Four buildings on low-lying land situated at Nos. 3, 5, 7, and 9, Cathay-street, Union-road, Rotherhithe (Messrs. Stock, Page, & Stock for Mr. W. L. Climpson).—Consent.

The recommendations marked † are contrary to the views of the local authority.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

ON February 1 Mr. A. C. Dickie, A.R.I.B.A., read a paper before the Discussion Section of the Architectural Association upon "Steps and their Treatment," and illustrated his remarks by an admirable collection of photographs, drawings, etc. He divided his paper as follows: — Monumental, civic, ecclesiastic and domestic, fountains and open spaces, dealing thoroughly with each in its turn. The monumental type was instanced by the Pyramids and many other examples culled from the East. The speaker next touched upon the steps of the Greek temples, and then passed on to Roman forms. He next described the treatment of the stepped streets of Malta and others like European examples, and, following this, commented upon the treatment of approach to buildings by broad flights of steps. The Renaissance period was next put under contribution, many interesting and instructive examples being mentioned, and pointed out by means of the illustrations gathered together by the speaker. The major part of these were drawn from Italian sources, the most noticeable being Michael-angelo's famous steps to the Bibliotheca Medico at Florence. English domestic work provided a number of good examples, and these Mr. Dickie commented upon at some length, drawing upon such well-known instances as Lord Burlington's villa, Chiswick; Prior Park Bath; Orangery, Bowood. The speaker then, by means of diagrams, showed the various forms of steps, and pointed out the advantages and disadvantages of each. In concluding, he said that perhaps the crux of the whole matter lay in the fact that "By some steps you wish to get there, by others you have got to."*

Mr. Louis Ambler, in opening the discussion, regretted that, having only seen the paper that day, his remarks would be somewhat fragmentary. At first sight the subject seemed simple, but, when considered, the enormous number of forms alone was wonderful. He thought that the steps (or stylobate), usually three in number, of the Greek temples suffered

*** We give only a short *résumé* of the paper, as we hope to find space afterwards to publish it in full.—ED.**

from the practical point of view by being too high, and was of the opinion that the Roman examples were better, as being generally shallower. He noted in Mr. Dickie's paper a marked absence of reference to Italian examples, such as the Palazzo Publico at Perugia, which was extremely picturesque. The dictum laid down by some authorities as to the imitation in number of steps must, he thought, in view of the numerous successful examples shown that evening upon the screens, give way in measure to a greater latitude. As a contrast to the foregoing, he considered that some cases, notably the celebrated fountain at Viterbo, suffered very much from too many steps, and the one at Guingamp from the absence of any form of steps. In connexion with this, he had noted the comparative absence of steps in the designs of Gothic cathedrals and churches. He also noted that Mr. Dickie had made no allusion to stairs in turrets, of which there were a number of well-known examples, such as the one at the Minelli Palace, Venice, and the Château Blois. Mr. Ambler touched upon a number of French, Italian, and English Renaissance examples, and, in conclusion, referred to the alteration to the steps of St. Martin's-in-the-Fields as being unfortunate, inasmuch as the landing on the west side had been removed but the return piece on the south side had been retained.

Mr. Theodore Fyfe gave some interesting facts about the subject, notably in regard to the Island of Crete, where one magnificent flight he had seen had a width of 45 ft., the risers being 5½ in. and treads 15 in., the latter being slightly weathered. This flight was very easy to mount, due, he thought, to the proportion of tread to riser. He considered the Albert Memorial was a successful modern example, but those at St. George's Hall, Liverpool, the reverse. The steps shown on Mr. Dickie's plate of the Parthenon seemed all too narrow for the purpose.

Mr. F. Lishman drew attention to the satisfactory effect of the blocks to sides of steps in Wells Cathedral leading up to the chapter-house, and thought the steps up to the choir at Canterbury Cathedral exceptionally fine. He agreed with Mr. Fyfe as regarded the Albert Memorial, but regretted the placing of the upper and lower railings to the flights, which marred the complete effect. He failed to see any advantage in weathering the treads of steps.

Mr. A. H. Belcher said that some buildings could be dissociated from their bases of steps without the difference being very noticeable, but others, obviously planned in conjunction with them at the outset, could not, and gave, as an instance of this, Prior Park, near Bath. Another example was that of the Cathedral of St. Gudule, at Brussels.

Mr. H. Gregory Collins (Chairman), in calling upon Mr. Gerald C. Horsley to sum up the discussion in his capacity of Special Visitor, regretted that the lateness of the hour prevented him from joining the discussion, as it was a subject he had a considerable interest in, both practical and artistic.

Mr. Horsley, in speaking, expressed the thanks of the meeting to Mr. Dickie for his interesting paper, but said it left them, so to speak, upon the fringe of the matter, but he trusted that at some future date it would be amplified. Mr. Dickie, he thought, had shown wisdom in confining his remarks that evening to external steps, for, had he not done so, such a paper would not have been possible in the limited space of time. He fancied some of those present might be labouring under a misapprehension regarding the question of the Greek stylobates to the temples, these being intended more in the nature of pedestals or plinths than steps. In a German restoration of the Temple of Zeus, Olympia, the central part of the stylobate was shown as given up to an inclined plane. He thought the interiors of the temples were not much used, the altars being outside, and, consequently, steps such as understood to-day were not greatly needed. In reference to Mr. Fyfe's remarks anent the steps to the south front of St. George's Hall, he wondered whether the author of the design had not intended the side flights for spectacular use, whilst reserving the central flight for processional purposes. The same idea could be traced in Michaelangelo's beautiful steps at the Laurentian Library. As a comparison, unfavourable, he regretted to say, to us, between the satisfactory form of the Italian steps and the unsatisfactory form of English, he would mention those at Lincoln and Hastings, which, with their steep risers and insufficient treads, contrasted badly with the low risers and broad treads of Italian examples. An interesting point to note was that many of the steps in this latter country, constructed in times past, were intended for horse or mule traffic, just as was the case in our own west country town of Clovelly. A feature of Italian work was the use of the inclined plane for mounting heights in a building such as obtained in the recently destroyed Campanile at Venice, and many other examples abounded. He thought that perhaps the dictum spoken about by some of the earlier speakers had reference to internal and not external steps, but, personally, he deprecated the use of more than twelve or, at most, fourteen steps in a flight, for anything beyond this was most formidable to persons advancing in years. In concluding, he would offer the advice to study the examples of Michaelangelo and carefully avoid the excesses practised during some periods, such, for example, as the double ogee type of the French Renaissance period.

A hearty vote of thanks was unanimously carried, both to Mr. Dickie for his paper and Mr. Horsley for his address, and, after Mr. Dickie had briefly replied, the meeting terminated.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—At the meeting on the 1st inst., Sir Henry Howorth, President, in the chair, a paper on "Japanese Sword-blades," with lantern illustrations, was read by Mr. Alfred Dobrée, who also exhibited several fine specimens. After remarks by the President, who exhibited three Japanese swords, the discussion was continued by Lord Dillon, Mr. Rice, and Mr. Worsfold.

THE SANITARY INSPECTORS' ASSOCIATION.

THE twenty-second annual dinner of the Sanitary Inspectors' Association (Incorporated) was held on Saturday last week in the Venetian Chamber, Holborn Restaurant, W.C. In the unavoidable absence of the President (Sir J. Crichton-Browne, F.R.S.) the chair was occupied by Sir Hugh Gilzean Reid, D.L., LL.D., past-President of the Association, and there was a large number of members and friends of the Association present, including Sir Lauder Brunton, M.D., F.R.S., Sir Shirley F. Murphy, L.C.C., Dr. T. O. Dudfield, Dr. Parkinson, Dr. Sykes, Alderman J. McLauchlan, Alderman Francis, and Messrs. G. H. Anderson, Andrew Clarke, M.D., T. G. Dee, G. Elliston, G. Laurence Gomme, C. Grey, H. Johnson, J. Pearce, L. Potts, J. T. Quinton, J. Milsom Rhodes, M.D., E. White Wallis, W. Watkins, J. Smith Whittaker, W. Whittaker (Chairman of Council, Royal Sanitary Institute), I. Young (Chairman of Council), E. C. C. Tidman (Secretary), and several mayors of Borough Councils.

After dinner, the Chairman said his first words to them that evening—and he was sure they would express the sentiments of everyone present—would be an expression of sorrow, for they had not there with them their late secretary and friend, Edward Tidman. He had known Mr. Tidman from boyhood, had traced all the steps of his career, and had known him always as a true friend, a capable expert in his profession, and a devoted servant for the people. They all deeply regretted the loss of Mr. Tidman, and the only compensation they had was that his son had been appointed to succeed him.

The loyal toast having been honoured,

Alderman Francis, ex-Mayor of Southend-on-Sea, proposed the toast of "Local Government," and in doing so said he appreciated the chairman's remarks about their late secretary. He knew full well that Mr. Tidman's interests were bound up in the success of the Association, and he ventured to suggest that they could show their regard for him by doing all they possibly could to further the work he had so much at heart.

Sir Shirley F. Murphy, in reply, said there had perhaps been no greater event in the history of the country than the development of local government within recent years, and it would have been impossible for the country to have made the progress it has made if communities had not been permitted to govern themselves. But however much local government might develop, it would always need the help of medical officers of health and sanitary inspectors, and it was necessary for them to keep ahead of existing knowledge, and well informed on all technical matters on which they might have to advise their Councils. Efficiency and integrity were the two qualities needed, and without them not only would officers fail, but local government also. There was no question that confidence existed now as to local government.

Mr. G. Laurence Gomme, Clerk to the L.C.C., also replied, and remarked that in his opinion many matters now attended to by Parliament would in time be dealt with by local parliaments, and as officers they should make themselves capable of dealing with any new powers which might be given to them. He strongly believed that Englishmen were capable of governing themselves—in local as in Imperial government.

The Chairman then proposed "The Sanitary Inspectors' Association." He said that the membership of the Association had been steadily increasing all the time, but within the past two years a new departure had been taken. Last year they effected one or two amalgamations which had enabled them to carry out a scheme which had hitherto been impossible, *i.e.*, to divide the whole of England and Wales into districts or centres, so that the Association covered every part of the country with local representatives who knew the local requirements. This was giving, and would give, a life and vitality to the Association which it was impossible for it to possess when merely worked from the centre in London. They had also arranged to affiliate with the Inspectors' Association in Scotland, and the principle of decentralisation on which they had been working would make the Association a living power in every part of the Kingdom. The British Medical Association had promoted a Bill in the next session of Parliament the object of which was to amend the law relating to the tenure of office of medical officers of health and sanitary inspectors. The object was to define legally the qualification of medical officers and sanitary inspectors, and to obtain security of tenure in their respective offices. He hoped to see the Association take another step forward and obtain a Royal Charter of Incorporation which would legally define the position of the sanitary inspector, would give him a recognised professional status, and would bring to him privileges and powers akin to those possessed by the Royal Academy of Arts and our great Universities. The Association meant to go forward and become recognised as one of the great permanent institutions of the country. With the toast he coupled the name of Mr. Isaac Young, who, to his knowledge had rendered great services to the Association.

Mr. Young, in response, first referred to the loss the Association had sustained in the death of Mr. Tidman, who had laboured well for them for a number of years, and under whose guidance the Association had made excellent progress. The loss they had sustained could not well be made good by anyone inside or outside the public health service, but they had appointed Mr. E. C. C. Tidman to succeed his father. Mr. Tidman had for the last two and a half years carried out the duties of his father in an excellent way. During the past three years the work of the Association had been exceptionally heavy. They had altered the articles of association and had created the National Union of Sanitary Inspectors, and since then they had been joined by the South Wales and Monmouthshire Association, and had arranged a scheme of federation with the Scottish Association. They would now be able to settle down to some useful work in their own cause and for their own purpose. As to the security of tenure of office, officers were not able to discharge their duties because of vested interests, and the consequence was that the public health service was jeopardised. If Parliament would not give them security of tenure then the whole of the local government should be transferred to a central authority. From an educational point of view, and in the interest taken in the meetings, the visit to Bournemouth last autumn excelled all previous similar meetings. They had in the Association about 1,000 members, and before the next annual meeting they hoped to increase that membership by 300 or 400. They were determined to secure for their calling that recognition which they thought it ought to have, not only from the public, but from the powers that be.

Dr. Sykes then proposed "Science and Art," coupled with the names of Sir Lauder Brunton and Mr. Andrew Clarke, M.D. In the course of his remarks he referred to the improvement in the class of men who formerly served the public in the capacity of medical officers, sanitary inspectors, and surveyors, especially in small

districts, compared with those officers of the present day. The toast should really be "science and art of hygiene and sanitation."

Sir Lauder Brunton, in reply, said that the three arts—painting, sculpture, and architecture—were all very advantageous to man, and gave a very great deal of pleasure. They had little to do with painting and sculpture and a great deal with architecture, and he called attention to an exhaustive little book by Dr. Sykes in which the author traced the history of architecture from the earliest to civilised times. There was one art which more than any other engaged the attention of other men and women, and that was the art of prolonging life; but although this art had been practised for unknown thousands of years, they had not attained to very great perfection in it. Science gave the general rules, but it was the individual who practised the art. He hoped the Association would be successful in their endeavour to carry this art to perfection, and enable people to live up to and beyond 100 years of age.

Dr. Clarke said that as a medical student he used to be struck with the artistic drawings on the blackboard of anatomical subjects. It was the desire of the British Medical Association to assist not only medical officers of health, but sanitary inspectors also in regard to the matter of security of tenure of office. They knew that the subject was of very great importance, and they hoped that the Bill which had been promoted would be of some use.

Alderman Jeffreys, Mayor of Chelsea, in proposing "Kindred Associations," said he agreed as to the necessity of security of tenure of office for sanitary inspectors.

Dr. Parkinson, M.O.H., in reply, said that the Bill for securing tenure of office had been before Parliament many times, and it contained a proviso for superannuation which had proved a hindrance to the passing of the Bill, and they would have to drop that part of it in order to secure the principle of tenure of office. They had greater hope of passing the Bill than ever they had before, for it was recognised as being necessary by some of the officials of the Local Government Board. The British Medical Association hoped that Mr. Long would receive a deputation, and they hoped to be joined by the Sanitary Inspectors' Association and other kindred bodies. He congratulated the Association on the way in which it was managed.

Mr. Whittaker, F.G.S., also replied, and referred to the improvement of the class of sanitary inspectors of to-day compared with those of ten years ago; no doubt they would continue to improve, and it was good that they should have an association to look after their interests.

Dr. R. Dudfield said he wished the British Medical Officers of Health and the Association of Sanitary Inspectors were more closely united, but he feared it was too late now to merge the two.

The concluding toasts were "The Visitors," proposed by Mr. J. T. Quinton, and responded to by the Mayors of Kensington and Bethnal Green; "The Chairman," proposed by Mr. G. H. Anderson; and "The Press," proposed by Mr. T. G. Dee, Hon. Treasurer.

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—The first ordinary meeting of the Society of Engineers for the present year was held on Monday, the 5th inst., at the Royal United Service Institution, Whitehall. Mr. D. B. Butler, the President for 1904, first occupied the chair, and presented the premiums awarded for papers read during that year, viz.:—The President's Gold Medal to Mr. William Edward Storey for his paper on "Condensing Machinery"; the Bessemer Premium of Books to Mr. R. G. Allanson-Winn for his paper on "Deep Sea Erosion and Foreshore Protection"; a Society's Premium of Books to Mr. A. S. E. Ackermann for his paper on "British and American Coal-cutting Machines"; and a Society's Premium of Books to Mr. Frank Latham for his paper on "Some Recent Works of Water Supply at Penzance." The thanks of the Society were also accorded to Mr. H. C. H. Shenton for his paper on "The Latest Practice in Sewage Disposal"; to Mr. Percy G. Scott for his paper on "Railway Surveys and Design in New Countries"; to Mr. James Thame for his paper on "Recent Developments in Crushing and Concentrating Machines"; and to Mr. Perry F. Nursey, Past-President and Secretary, for his "Jubilee Retrospect," being a brief history of the Society from its inception to date. Mr. Butler then introduced the President for the present year, Mr. Nicholas James West, to the meeting and retired from the chair, receiving a hearty and unanimous vote of thanks for his services during the past year. The President then proceeded to deliver his inaugural address, in which he dealt mainly with the mechanical side of engineering, with reference to the historical use and improvement of pumping and marine engines and the application of the latter at various periods to vessels of different kinds, and he included a reference to the latest phase of turbine propulsion. He first gave a historical account of Cornish pumping engines, tracing their gradual development at the hands of Savery, Newcomen, Trevithick, Watt, Hornblower, and Woolf, and describing the inventions and adaptations of those pioneers of steam-pumping engines. He noted as an interesting point that, incredible as it might seem, for fifty years the use of the steam engine was confined to the pumping of water. It was not until 1780 that rotary motion was obtained from the steam engine by means of a crank. Watt objected to the use of his engine, if the crank was attached to it, and invented the sun-and-planet wheel in place of the crank. In 1837 Cornish engines were first introduced for pumping water for the supply of London at the East London Waterworks. One was purchased in Cornwall having a 90-in. cylinder and a 10-ft. stroke. It worked most economically for twenty-five years, and was only removed when the pumping works were closed in 1892. This class of engine is extensively used by the large London and other water companies. The President then referred to the Severn Tunnel pumping plant, which, he observed, was the largest pumping plant of which he knew. It was installed at each side of the Severn Tunnel on the Great Western Railway. It is entirely of the Cornish type, and the engines and pumps have a total pumping capacity of 66,000,000 gallons in twenty-four hours. The quantity dealt with under ordinary circumstances varies from 16,000,000 to 34,000,000. The President observed that he was connected with that installation from commencement to finish, a period of about thirteen years. The remainder of the address dealt with the subject of marine propulsion.

THE INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting on Tuesday, the 7th inst., Sir Guilford L. Molesworth, President, in the chair, it was announced that nineteen associate members had been transferred to the class of members, viz., Messrs. William Bates, E. T. Beard, O. F. L. W. Cuffe, C. R. Fenwick, C. O. Grimshaw, D. J. Highet, J. N. Kirby, C. N. Lailey. O. C. Lees, C. F. Marsh, E. H. S. Napier, H. W. Parkinson, J. S. Pickering, Arthur Powell, Theodore Pridham, George Rankin, P. J. Sheldon, A. T. Snell, E. R. Waight. It was also reported that sixteen candidates had been admitted as students, viz., H. L. Byrd, C. C. Canney, G. C. Carson, F. J. Collier, B. G. Cooke, F. R. Gibbins, A. F. L. H. Harrison, T. B. Keep, Lionel Page, A. E. Paul, B.A., G. B. Rolfe, G. W. N. Rose, B.Sc., T. B. Stewart, T. F. Tomlinson, H. B. Ward, B.Sc., and P. E. Williams. The monthly ballot resulted in the election of seven members, viz., Messrs. F. Hellmann (Transvaal), J. B. Hunt, J. Inglis, D. Macdonald (Hong Kong), C. B. Smith, Ma.E. (Toronto), J. F. Sorzano (New York), and G. W. Wolff, M.P. Twenty associate members were also elected, viz., W. H. C. Clay, Stud.Inst.C.E., J. L. Cridlan, Stud.Inst.C.E., H. Dalgarno-Robinson, J. D. D. Davis, Stud.Inst.C.E., T. S. Ennis, B.E., Don E. Ferro, B.A. (Colombia), E. P. Harvey, B.A., A. G. F. Heather, Stud.Inst.C.E. (Transvaal), L. H. L. Huddart, B.A., Stud.Inst.C.E. (West Coast Africa), W. C. Isle, B.Sc. (Victoria), Stud.Inst.C.E., J. M. Mackay, Stud.Inst.C.E., M. S. McKay, B.A., B.A.I., R. C. S. Murray, B.A., Stud.Inst.C.E., I. V. Robinson, Stud.Inst.C.E., G. W. Shearer, B.Sc., A. O. Sherren, Stud.Inst.C.E., E. D. Simon, B.A., Stud.Inst.C.E., P. B. le D. Tree, Stud.Inst.C.E. (Punjab), R. P. Wilson, W. R. Wilson, B.Sc. (Orange River Colony); all of Great Britain except where otherwise stated.

APPOINTMENT. — Mr. Henry Adams, M.Inst.C.E., etc., and until recently Professor of Engineering at the City of London College, has been appointed a Chief Examiner in Building Construction to the Board of Education, South Kensington.

Books.

Lives of the Engineers: Vermuyden—Myddelton—Perry—James Brindley. By SAMUEL SMILES. Popular Edition. London: John Murray. 1904.

NEARLY fifty years ago the author published the life of George Stephenson, and the lives of other engineers followed, forming a complete series. The original edition being exhausted last year, the work is now republished in popular form. Some modifications have been made, but essentially the original narrative remains unaltered. The book which we have received is simply one of five volumes, and for this reason we are unable to notice more than a small part of the complete work.

In early times reliance was placed almost entirely upon foreign engineers for works of embankment and drainage, and particularly upon the Dutch, for whom Sir Cornelius Vermuyden was a worthy representative. The great works of reclamation inaugurated by this indefatigable engineer are fully recounted by the author. Among these the chief were the drainage of Axholme, on the borders of Yorkshire and Lincolnshire, and of the great Fen Level, the final reclamation of this area in later years having added 680,000 acres of most fertile land to the natural wealth of the country.

Sir Hugh Myddelton, another early engineer, is famous as the creator of the New River, the construction of which is adequately dealt with in the life of this pioneer, who afterwards devoted himself to various other engineering works in the way of land reclamation and mining. Captain Perry is the next example taken, and in his life the reader will find most interesting material relative to the great breach in the river Thames at Dagenham, which resulted in the ruin of a thousand acres of agricultural land, and in the formation of a bank half-way across the river to the serious interruption of navigation. This breach, which for years defied the engineering talent of England, was finally stopped by Perry in 1719. In the next chapter, the author discusses briefly, "The Beginnings of Canal Navigation," afterwards commencing the "Life of James Brindley," in seven chapters, which, with the exception of an appendix, occupy the remainder of the present volume. As the engineer of the Bridgewater Canal, the Grand Trunk Canal, and many other inland waterways with a total length of nearly 370 miles, and the consulting engineer to various canal projects, Brindley may be characterised as one of the greatest among early English engineers, and the excellent memoir of him presented by the author affords interesting as well as most instructive reading.

Few of the men whose lives are recorded by Dr. Smiles belonged to the educated classes. Some could scarcely write their own names, but, being born engineers, they rose to eminence by the help of observation, sound judgment, tireless industry, and indomitable perseverance. Their lives will continue to be read with pleasure by all true Englishmen, and should be studied by every engineering student and young engineer who is not already familiar with them.

Since the above was written, we have received the second volume of the same series containing the lives of Edwards, Smeaton, and Rennie. The sketch of the former is, however, only a kind of appendage to a historical sketch of the difficulties with harbours, beacons, and bridges in the præ-engineering days of England, with a chapter devoted to old London Bridge. There is curious oversight on page 68, where it is stated that in the bridge at Llanwrst, said to have been designed by Inigo Jones, "the pointed arch is no longer adopted, but three segmental arches," while on the previous pages is the view of the bridge with three pointed arches! This looks as if Smiles got up his facts independent of the illustrations, or did not understand the latter. The name of Edwards, the Welsh bridge-builder (born 1719), is nearly forgotten now, but he was a man of courage and resource, and his Pont-y-pridd bridge, with its arch in one span of 140 ft., was a remarkable work, which still stands, though its formidable gradient led to the building of a modern bridge alongside of it with a more level road-way, the original work being fortunately left as a monument of its author.

With the life of Smeaton we come nearer to the times of modern engineering. A good sketch is given of the history of Winstanley's and Smeaton's Eddystone lighthouses. The illustration of Winstanley's lighthouse, which was swept

away, with the too confident designer, in a gale, suggests the lesson of not attempting to make a thing ornamental when it is a question of stability only. His Chinese-pagoda kind of erection seems the last thing that one would expect to withstand the assault of heavy seas. Rudyerd's lighthouse, which succeeded it, though still of timber, was a much more practical affair, and apparently might have stood for long had it not caught fire and been burned down. Smeaton's great work is still of practical interest, and is well described, and a plan of one story is given showing its remarkable construction. The accounts of the building raised great interest at the time, and Smeaton's rooms were thronged with visitors to see the model, though his success does not seem to have brought him much work at the time.

Rennie's engineering work was so varied and extensive that even a popular account of it can hardly be adequately given within the limits allowed in this volume; but the general reader may obtain from it a fair estimate of the man and his work. In fact, during a considerable part of his life Rennie's directing mind was almost everywhere in engineering work, in drainage, harbours, and bridges. There are important bridges of which his authorship is mostly forgotten; and, on the other hand, works of which the design was probably his but of which some one who carried them out got the credit. One incident in regard to Plymouth breakwater is interesting as illustrating both Rennie's perception, and the manner in which the forces of nature found out his opponents; for Rennie has advised a slope of 5 to 1 on the sea face of the breakwater, which was commuted to 3 to 1, for economic reasons and against his judgment. However, after a portion of it had been built on the 3 to 1 slope, a night's gale raked it down to 5 to 1, thus conforming the engineer's prescience; and the joint advice of Rennie and the sea was accordingly followed.

Papers of the British School at Rome. Vol. II. By T. ASHBY, Junr., M.A., F.S.A., Assistant Director of the British School at Rome. London: Macmillan & Co. 1904.

THE second volume of the papers of the British School at Rome deals entirely with one subject, the notes and explanations in regard to a set of original architectural drawings of the Renaissance period, which form a portion of the hidden treasures of the Soane Museum. Thus the material for the latest publication of the School at Rome comes from a museum in London; but it quite falls within the programme of the school, and they have done a service in publishing this very interesting set of drawings.

The portfolio containing the drawings was bought at Robert Adam's sale in 1818, and appeared in the catalogue as "*Architectura Civilis*; a volume containing measurements and sections of celebrated ancient edifices by a Florentine architect." Whether the supposed author of the larger proportion (for there are two hands in the collection) could be rightly called "a Florentine architect" may be a question. If Mr. Ashby's attribution of the authorship is correct he was more probably a German, and not even residing in Florence. None of the sketches are signed, and the only clue to the authorship is that one of the sheets is a copy of a letter from one Andreas Coner, written in Italian and dated from Rome, addressed to Bernard Rucellai of Florence, describing an ancient Roman sundial of which one drawing appears in the collection, but four drawings are mentioned in the letter. The letter is a copy, as it bears the heading, "Lettera d'Andrea Conero a Bernardo Rucellai." This does not seem very convincing as to the authorship of the drawings, but as nothing is known of Coner in any other way it perhaps does not very much matter; the interest of the drawings is in themselves, and it is convenient to call them the Coner drawings, whether we accept the name as that of the author or not.

The drawings are numbered in order, but not in the hand of the author, so that they must have been collected and numbered by someone else. The originals are about 9 in. high by 6½ wide; sketch book leaves, many of them drawn on both sides. They have been reproduced to a size about five-sixths that of the originals.

Most of them are drawings of portions of Classic buildings, sketches and sections of cornices, capitals, etc.; a certain number of plans, and some interesting perspective sketches of considerable portions of a building, notably an admirable one of part of the interior of the Colosseum, part section part view, which as a sketch is masterly, and shows a very practised hand. The drawings of cornices and entablatures are for the most part carefully figured as to heights and projections; the whole are evidently the work of an architect.

Any such collection from the Renaissance period is, of course, interesting to possess in fac-simile; it seems to take us back into the artistic life of the time. There are some, however, which are of special interest. There is a plan of St. Peter's which Baron de Geymüller (and there can be no better judge) is certain has been copied from one of Bramante's, and shows one stage in the working out of his plan. There is a sketch of the wall under the portico of the Pantheon indicating the decorative marble panels between the pilasters, which are now gone. There is a very fine sketch of the entablature and capitals of the Basilica Æmilia; the correctness, Mr. Ashby tells us, has been proved by some fine fragments recently discovered. There are some fine sketches of entablatures not recognised, which may be original designs. There is a remarkable head of a female Caryatide, of which the original is lost, but which is said to be evidently the model for the Caryatides by Raphael in the Stanza d'Eliodoro; and we should surmise that the Caryatides of the Erechtheion had furnished the suggestion for this one; the similarity in general character is remarkable, in spite of differences of detail.

Mr. Ashby's notes on the drawings show that he has made himself acquainted with almost all documents and drawings bearing on the subject. In every sense the volume does honour to the British School at Rome, and forms an important addition to architectural literature.

Fifty Years Ago.

THE BRITISH INSTITUTION.—Little can be said congratulatory of the majority of the works here appertaining to the historical or subject class. *Mediocre* would be a polite term to apply to them. Even the few that assert a claim to be looked at and admired, excepting one or two instances, emanate from those from whom more might be expected. Not many years ago the opening day of the British Institution used to be anticipated with a pleasure and excitement only second to that which awaited, and still awaits, happily with growing cause, the annual gathering by the Royal Academy. Then it was customary with our first painters to contribute. Maclise, Landseer, Collins, Etty, Stanfield, Roberts, Poole, Danby, Finnell, Martin, and other names of equal celebrity were naturally looked for and found in the catalogue. Who now are their substitutes? Is it not extraordinary that amongst the half score of rising men, who year after year complain of neglect on the part of Royal Academy jurors (because they, having barely space for six pictures, are expected to award good positions to twelve, and fail *sometimes* in pleasing all), some do not avail themselves of this gallery to be seen to advantage? Whether they may have been deterred from exhibiting by instances of injustice on the part of former hanging committees, or whatever may be the cause, certain it is, they do not come here, and the value of the exhibition is not maintained.—The *Builder*, February 10, 1855.

Illustrations.

ILLUSTRATIONS OF BAALBEK.

THE first three of these plates are given as illustrations of the important paper by Mr. Spiers which forms the second article in this issue.

The fourth illustration, that of part of the Temple of Jupiter, is not directly connected with the main subject of Mr. Spiers's article—the trilithon; it is added as giving an illustration of more directly architectural character than the others; but it also bears on the subject of the great size generally of the stones used in the structures at Baalbek. On this point Mr. Spiers writes:—

"Fergusson, in his *History of Architecture*, commenting on the immense size of the stones composing the trilithon, says: 'It is true that in many places in the Bible and in Josephus nothing is so much insisted upon as the immense size of the stones used in the building of the Temple and the walls of Jerusalem, the bulk of the materials used appearing to have been thought a matter of far more importance than the architecture. As it is, there seems no reason for doubting their being of the same age as the Temples they support, though their use is certainly exceptional in Roman buildings of this class.' Now, although the dimensions of the stones of the trilithon are far greater than others employed in the structure, the walls of the lower portion of the whole acropolis up to a level of about 30 ft. from the ground are built in courses the height of which varies from 3 ft. to 6 ft. The substructure of the propylæa, for instance, which is 25 ft. high, has only four courses, which, therefore, average 6 ft. 3 in. each.

In the Temple of Jupiter, the stones which constitute the architrave and frieze of the entablature are worked out of blocks which measure 8 ft. in height, 7 ft. in thickness, and 16 ft. in length, and they are raised to a height of 97 ft. from the ground. The stones occupying a similar position in the great Temple of Jupiter Sol are, of course, still larger in their dimensions."

PROPOSED BRIDGE, AYLESFORD.

WE gave in our issue of September 17, 1904, an illustration of the picturesque old mediæval bridge at Aylesford, the threatened removal of which had occasioned strong expressions of regret in many quarters, in which we fully concurred. After a special visit to the place, we came to the conclusion that there were no obvious practical reasons for the removal of the bridge which could in any way compensate for the destruction of so charming and picturesque a bit of old England.

The design for a bridge here illustrated is the one which was selected in the competition opened for a new bridge by the Town Council of Maidstone, when the unfortunate idea of destroying the old bridge first occurred to them. We refer to the subject of the old bridge and an illustration of it in order to point out that, in giving an illustration of the proposed new one, we are not for a moment wishing to support the scheme. On the contrary, we hope it will never be carried out, seeing that this will involve the destruction of the old bridge and of the greatest element of the picturesque in connexion with Aylesford; something will be lost which cannot be replaced.

On the other hand, this is a very good specimen, from an engineering point of view, of a masonry bridge for a small navigable river; it is not always that we have an opportunity of illustrating a constructional scheme of this kind; and from the architectural point of view is wholly unobjectionable; it is quite simple and straightforward in treatment, and not vulgarised by any miscalled ornament. It is a bridge we should be quite willing to see built in any position where an old and picturesque one was not sacrificed for the sake of it.

The principal practical improvement is in the increased width of roadway and waterway, but as far as one day's observation goes we should have said that both widths are more than are required by the existing traffic, Aylesford being apparently about as sleepy a little town as one could well come across. One of the complaints against the existing bridge is its gradient, but it will be seen by the small comparative diagram that the gradient for the proposed new bridge is slightly steeper than that of the existing one.

The requirement in the competition was that the width of the roadway was to be 30 ft. with a footpath of 5 ft. wide on each side and that the river was to be spanned by a single arch of not less than 100 ft. clear opening at high tide, with a headway equal to that of Rochester bridge. It was subsequently proposed, in order to lessen the cost, to reduce the bridge to 34 ft. total width and 16 ft. headway.

The engineers' estimated cost of the bridge and approaches is 27,885*l*. Other miscellaneous contingent expenses connected with alterations in adjoining properties, compensation, etc., would bring it up to 37,000*l*.

The scheme had to have the concurrence of the County Council and of the Rochester bridge wardens, as well as that of the Maidstone Town Council. In what position it now stands we are not able to say.

THE LATE J. T. WIMPERIS AND THE INSTITUTE.—It is stated that the gross value of the estate of the late John Thomas Wimperis, F.R.I.B.A., amounts to 51,430*l*., and that his dispositions comprise a bequest of 1,000*l*. to the Royal Institute of British Architects for the purpose of promoting the study of architecture.

COMPETITIONS.

PUBLIC OFFICES, WALLASEY.—It is stated that Sir William Emerson, the assessor appointed by the Wallasey District Council to adjudicate upon the plans received for the new public offices proposed to be erected on the North Meade estate, Seacombe, has awarded the first premium of 250*l.* to Messrs. Briggs & Wolstenholme, of North John-street, Liverpool. The other premiums of 75*l.* and 50*l.* are awarded to Mr. A. R. Jemmett and Mr. G. T. M'Combie, 11, Little College-street, Westminster, London, and Mr. W. H. Ashford, of Messrs. Ashford & Gladding, 90, New-street, Birmingham. No fewer than 96 designs were sent in.

KEYNSHAM-ROAD SCHOOLS, CHELTENHAM.—The result of the competition for these schools is as follows:—(1) Messrs. Chatters & Smithson (Cheltenham); (2) Messrs. Healing & Overbury (Cheltenham and Gloucester); (3) Mr. H. E. Lavender (Walsall).

MOFFAT COTTAGE HOSPITAL.—On the 6th inst., at a meeting of the trustees of the proposed Moffat Cottage Hospital, the competitive design submitted by Mr. Edward C. H. Maidman, Edinburgh, was selected from among forty designs. The hospital, which is estimated to cost about 1,000*l.*, will be erected on a site which has been acquired on the Selkirk-road.

NEW LIBRARY, NELSON.—The following letter, addressed to Mr. George Brown, Hon. Sec. of the Competitions Committee of the Manchester Society of Architects, has been forwarded to us:—

"Town Hall, Nelson,
February 2, 1905.

DEAR SIR,

FREE LIBRARY.

Adverting to your letter of January 24 ultimo, I am glad to be able to inform you that owing to your representations, and to the persuasive arguments of Mr. G. H. Willoughby, who happened to be here upon another matter a day or two later, my Council have reconsidered the condition as to remuneration, and have now amended same by allowing 1½ per cent. for quantities. A post-card, notifying this alteration, has been sent to each applicant for the conditions, and I hope this will be quite satisfactory.

Yours faithfully,
J. H. BALDWICK,
Town Clerk.

GEO. BROWN, Esq.,
8, Exchange-street,
Manchester."

We are glad to learn that the Committee has been successful in securing proper terms for the architects in this competition.

LIBRARIES, BELFAST.—The plans of Messrs. Graeme-Watt & Tulloch, of Belfast, have been selected in the competition for three Carnegie Branch Libraries at Belfast. Sir Thomas Drew was the assessor.

Correspondence.

THE "WELL FIRE."

SIR,—On reading a report of a meeting of the Architectural Association,* which appeared in your issue of January 28, we noticed some statements which appeared to be detrimental to the "Well Fire," and which, if left unnoticed, will, no doubt, give your readers an impression that the "Well Fire" is a dangerous form of fireplace, and a common cause of fires in dwelling-houses.

In the first place it is necessary to state most distinctly that the "Well Fire" is not a generic term, and that there is only one "Well Fire," of which we are the sole proprietors. We find it necessary to emphasise this statement, because of late quite a number of barless and other low types of fireplaces, none of which include the essential feature of the "Well Fire," have been indiscriminately called "Well Fires," and consequently the "Well Fire" has not only been confused in many cases with these other types, but it has unfortunately been associated with many failures and fires for which these other types are alone responsible. We will take as an instance the statement of Mr. E. O. Sachs, "that he had been given to understand that the fire at Sandringham was due to a fireplace of the 'well type.'" No doubt this statement is based upon a report to this effect which we know has been widely circulated by competitors, but it is totally untrue. We are in a position to state, on the authority of the architect, that the fire at Sandringham was not caused by a "Well Fire," but by an altogether different type of fireplace. Had a "Well Fire" been fixed it would have compelled the removal of the timber underneath the hearth. The fireplace, in this case, was placed *upon* the hearth, therefore the beam underneath was overlooked.

That a great many fires are caused by the use of ordinary modern grates, and especially the more recent low types, and that a still greater number of fires are narrowly averted thereby, we have ample proof, for in a large number of cases, when removing these types to fix "Well Fires," charred timber has been found underneath the hearthstone. There is no doubt that there are many modern grates which are unfortunately called "Well Fires," but which have no claim whatever to this title, to which the remarks of Mr. Max Clarke and Mr. Louis Jacobs will apply, but as these are fixed upon the hearth, and the "Well Fire" is partly sunk, and necessitates an examination of the space underneath the hearth, it should, if fixed according to printed instructions, be justly regarded as an actual preventative against fire rather than a source of danger.

We do not know whether the case mentioned by Mr. Louis Jacobs was connected with one of the various low types mentioned, or a genuine "Well Fire." A similar case, however, has come under our own observation, but it was found, on examination, that not only was the fireplace badly fixed, but the brickwork surrounding the fire was in a very bad condition. The fact that hundreds of "Well Fires" are fixed against a 9-in. wall without causing any similar trouble to the one named is a sufficient proof that the above case was an exception, and due to special causes.

For the Well Fire Company, Ltd.,
J. FAWCITT,
General Manager.

*Architectural Association Discussion Section, page 91.—ED.

SEWER VENTILATION AND INTERCEPTORS.

SIR,—Some little while since you printed in your paper a report which I submitted to the Works and General Purposes Committee of the Lewisham Borough Council. This report was approved by the Committee, and they recommended that it should be reported *in extenso* to the Council, and thus it became public. I now desire, in view of the fact that this report was not intended for publication, to amplify my views on the subject, and shall be obliged if you will publish this letter.

The benefit to sewer ventilation which must arise from the abolition of the interceptor is, I presume, admitted; it therefore only remains to show that there is no damage to the individual inhabitant by its omission. One of the most frequent objections which I have heard is, "Why should property owners ventilate the public sewers." My answer to this is:—The public sewers are the property of the community at large, and, if not ventilated by each individual house, some other system, probably a very expensive one, must be adopted, which will have to be paid for by each house.

The interceptor is designed to block off from the house drain the air from the sewers, on the supposition that the sewer air is more foul than the drain air—a proposition which I do not admit—the condition of things in sewers being in all ways more favourable to pure air than the state of affairs in a private drain. In a sewer there is a flow which is always proceeding, although the depth varies, consequently the solid matter is always covered with water and gives off less effluvia than in a drain, where, as a rule, there are three or four deposits always left between the water-closet and the sewer, as the 2-gallon flush is not sufficient to carry the solid matter by one discharge into the sewer, and, in most cases, it takes three or four discharges; this was conclusively proved by the Sanitary Institute in 1893 (Vol. XIV., p. 237) in a series of over 800 experiments carried out with channel pipes, so that actual observations could be taken. The results arrived at showed that with 4-in. pipes, 50 ft. in length, at a gradient of 1 in 30, a total of 59 per cent. of solid matter was left in the closet trap, the drain and the interceptor, with a gradient of 1 in 40, the solid was 69 per cent., with a gradient of 1 in 75, 83 per cent. of the solid matter was not taken into the sewer. A further argument in favour of the superiority of sewer air to drain air is the frequent flushing and cleansing of sewers, whereas I have seldom heard of anyone who cleansed a drain unless it became stopped.

That the interceptor is a frequent cause of stopped drains is a matter beyond dispute to anyone who has had much experience in the maintenance of drains.

The fresh-air inlet, with a mica flap, is as often as not the foul-air outlet, as mica flaps are mostly out of order after they have been fixed six months.

A question has been asked, whether it is necessary to ventilate sewers; the answer appears so obvious that it seems a waste of time to argue the matter. There are two reasons which ought to be sufficient:—Firstly, the air would become so foul that I am confident it would be taken up by the water on the sewer side of the traps and given off again on the house side of the traps; secondly, it would be impossible for men to work in sewers which were unventilated, and in this borough, both brick and pipe sewers are regularly cleansed.

ERNEST VAN PUTTEN, A.M.I.C.E.
Borough Surveyor of Lewisham.

*** We have no objection to giving Mr. van Putten's letter the publicity he desires, although we do not think that he has made out a strong case against the intercepting trap. We acknowledge that stoppages in drains are often caused by these traps, and that the abolition of the interceptors in private drains would greatly improve the ventilation of the public sewers, but it does not follow that the abolition of the interceptors would be, on the whole, beneficial.

We are inclined to think that Mr. van Putten attempts to prove too much; certainly he will have some difficulty in convincing any normal sanitarian that "the condition of things in sewers [is] in all ways more favourable to pure air than the state of affairs in a private drain." If the conditions in sewers are indeed so favourable to pure air, why this trouble about sewer ventilation? In support of his dictum, Mr. van Putten adduces some experiments recorded by a committee of the Sanitary Institute in 1893, and makes the definite statement that these "conclusively proved" that "in most cases it takes three or four discharges" of a 2-gallon flushing cistern to wash the deposits from a water-closet into a sewer. They *proved* nothing of the sort, as in each experiment the solid matter left in the closet-trap, the drain, and the interceptor after one discharge of the flushing cistern, was "removed before the next experiment." We may *infer* that, at the least, one additional flush would be required to remove the solid matter, but we may not take it for *proved* that a third or a fourth would be necessary. Mr. van Putten also takes a somewhat unfair advantage of his readers by mentioning only those experiments which appear to tell in favour of his opinion, and ignoring those which have a contrary tendency. The experiments were made for the purpose of ascertaining "the quantity of water required to flush a water-closet," but our correspondent quotes only the tests with a 2-gallon flush and 4-in. drains (the conditions, we admit, usually, but not invariably, obtaining in practice), and even in these cases does not give the proportions of solid matter left in the closet-trap, drain, and interceptor respectively. With a 2-gallon flush the proportions left in the drain itself were 11, 27, and 26 per cent. for the three gradients of 1 in 30, 1 in 40, and 1 in 75. With a 2½-gallon flush, the proportions were only 2, 9, and 8 per cent., and with a 3-gallon flush, 0, 1, and 3 per cent. The experiments with 6-in. drains of the same length, and with shorter 4-in. and 6-in. drains were still less favourable to Mr. van Putten's contention. The obvious conclusions are that the 2-gallon flush was insufficient, and that when a larger flush was used and the drains were laid with sufficient fall, the deposit in the pipes was very small indeed.

It must not be forgotten that, in actual practice, two flushes are often given after each usage of a closet, and that the discharges from other sanitary fittings, especially baths, are useful in keeping drains free from permanent deposits.

But even if it be admitted that the air in drains is not always as pure as it might be, we do not see why this should be adduced as an argument in favour of using them as conduits for what we believe to be the still fouler air of sewers. We should say that the wiser course would be to rectify the defects, and so render the air as pure as the circumstances will allow.

It is incorrect to say that in a sewer "the solid matter is always covered with water." Does the writer of the statement forget that there are such things as branch sewers with dead ends, and that near these dead ends the sewers may receive the discharges from one drain only? And if deposits occur in a 4-in. drain with a gradient of 1 in 40, will they not also occur in a 9-in. or 12-in. sewer laid to a much lower gradient, and receiving the discharges from one, or even two, drains only? Again, it is well known that many sewers are very far from satisfactory, and it is unfair to call upon private owners of property to abate the nuisances created by the public authority. The fact is that many sewers are so foul that some of the ventilators at the street level have proved such intolerable nuisances that the public authorities have had to close them, and the public

officials appear to be at their wits' end to devise a simple and economical, as well as inoffensive, method of getting rid of the foul emanations so perversely produced under conditions "in all ways more favourable to pure air than the state of affairs in a private drain."

We believe that it would be a grave error and also an injustice to abolish intercepting traps, and thereby convert existing soil pipes into sewer-ventilators. The result would be that the only protection against the entrance of sewer-air into buildings would be the traps of water-closets, and if these were unsealed in any way (whether by siphonage, fracture, or removal for renewal and repairs), the sewers would be ventilated directly into the buildings. The ventilating shafts for public sewers ought to be entirely separate from private drains and sanitary fittings: the objections to the fixing of such shafts against the walls of buildings would be much less serious than those raised to the utilisation of existing soil pipes as sewer-ventilators.—ED.

The Student's Column.

TYPICAL STRUCTURES IN CONCRETE-STEEL.—VI.

A ONE-STORY FACTORY BUILDING.

THIS week we consider a building of an entirely different type from that forming the subject of the three preceding articles. The structure, which is typical of the Wight-Easton-Townsend system of reinforced concrete, is 312 ft. long, with a minimum width of 52 ft. and a maximum width of 112 ft. Beneath one of the workshops, measuring 142 ft. long by 65 ft. wide, a basement has been constructed, a portion of which is shown in section by Fig. 36. The roof of the entire building consists of a concrete-steel slab with girders of the same material, and over a portion of it are situated three tanks for the storage of water (see Fig. 34).

The building was erected on a part of Long Island City, New York, where the ground is of alluvial character, being in fact little better than mud. Consequently, pile foundations were absolutely necessary, the piles being driven in groups, upon each of which a mass concrete footing was formed, and upon the footing a concrete pier, as represented in Fig. 36. The footings were spaced 16 ft. apart longitudinally on lines corresponding with those of the outer walls, and in one portion of the building additional footings were made to afford a longitudinal row of supports for interior columns. The lateral spacing of the footings varied from 33 ft. to 52 ft. in different parts of the building.

In the basement mentioned above, the floor consists of a bed of simple concrete 6 in. thick, deposited on rammed and levelled earth. The columns, rising from the tops of the concrete piers, support the main floor and the roof of the building. The exterior columns are incorporated with the walls, forming pilasters either on the outside, as in Fig. 36, or on the inside, as in Fig. 35, while the interior columns serve as intermediate supports for the girders.

The exterior columns have a section of 16 in. by 12 in., and are reinforced by four vertical bars, with $\frac{3}{16}$-in. diam. horizontal ties at intervals of 12 in. measured vertically. In Fig. 36 the vertical reinforcement is composed of $\frac{3}{4}$-in. diam. bars, and in Fig. 35 of 1-in. diam. bars. In some of the columns it was necessary to employ $1\frac{1}{4}$-in. diam. bars as vertical reinforcement. All the concrete used in column construction was mixed in the proportions of 1 part Portland cement, 2 parts sand, and 4 parts broken stone.

A section of the exterior wall at the basement will be found in Fig. 36, from which it may be seen that, commencing at the top level of the concrete piers, the design is that of a curtain wall. To insure adequate support between the piers, the wall is provided with reinforcement consisting of four steel bars, two straight and two bent (see Fig. 36), and of thirty-nine vertical stirrups for resisting shear. This reinforcement really converts the lower part of the wall into a strong beam. At the level of the main floor the floor slabs are carried by girders formed in the thickness of the wall, the reinforcement being similar to that employed in the case of the walls at the basement.

Apart from the columns and girders incorporated in them, the walls are reinforced throughout with sheets of steel netting placed near the inner surface, the edges of the sheets being bent back to U-shaped section at the various window openings. This netting has strands of No. 9 gauge wire with 6 in. by 4 in. meshes, secured at the intersections by pieces of No. 9 gauge wire. Sheets of the same material, also bent to U-shape, are embedded below the window sills, and immediately under the roof slab the wall, for a depth of 11 in., is converted into a girder by the addition of longitudinal and vertical reinforcement generally similar to that at the lower levels. The details in question are clearly shown in Fig. 36.

The walls are 6 in. thick, and the concrete was mixed in the proportions of 1 part Portland cement, 2 parts sand, and 5 parts cinders.

That portion of the floor which is above the basement consists of a continuous concrete-steel slab 7 in. thick, the reinforcement being applied in the form of two sheets of steel netting, one sheet perfectly horizontal and the other bent up towards the lines of support. The edges of the sheets are folded at right angles to afford satisfactory anchorage. A part of the floor slab is shown in the section A—A, Fig. 36. The weight of the main floor is carried entirely by the columns and girders, the latter term including the girders formed in the substance of the outer walls.

One of the most interesting features in this building is to be found in the roof construction. The upper surface of the slab has a slope of about 1 in 48, and the slab is divided into panels approximately 16 ft. square by the transverse and longitudinal girders. Over some of the workshops the slab is 4 in. thick, but generally the thickness is 6 in. Reinforcement is provided by two sheets of steel netting, as in the case of the main floor slab.

The transverse girders vary in dimensions and span at different parts of the building. Over one room their dimensions are 10 in. wide by 24 in. deep, over the boiler room the dimensions are 12 in. wide by 24 in. deep (see Fig. 34), while elsewhere they are 15 in. wide by 30 in. deep. The last mentioned dimensions apply to the girders illustrated in Figs. 33 and 35, these having the exceptionally long span of 52 ft. centre to centre, or 50 ft. 2 in. clear span between supports. The longitudinal girders, practically floor joists, measure 6 in. wide by 12 in. deep in some cases and 8 in. wide by 12 in. deep in others.

Three panels over the boiler room are covered by concrete-steel water tanks, particulars of which are shown in Fig. 34. It will be observed that the tank at the left side of the figure is about 14 ft. wide by 12 ft. deep, inside measurement. The walls of the tank are formed by vertical slabs of reinforced concrete, with stanchions at intervals, generally similar in design to the joists used in the floors.

Owing to the weight of the tanks and of the water contained therein, the stress in the compressive areas of the girders was found by calculation to be greater than the compressive resistance of the concrete. Hence it became necessary to add horizontal reinforcing bars along the upper flanges. Similarly, owing to the high stress in the tensile areas, it was requisite to increase the amount of reinforcement in tension. By reference to the two sections in Fig. 34, it will be observed that nine $1\frac{7}{16}$-in. bars are used in the tension areas of each type of beam, and that eight bars of equal diameter are employed in the compression area of one beam and six in the corresponding area of the other.

Adverting to the main roof girders, we may say that, although the clear span is not the longest on record, it is very nearly so. Therefore, it is satisfactory to be able to state that the members proved to be of ample strength and rigidity. As may be seen on reference to Figs. 33 and 35, they are reinforced by six $1\frac{5}{16}$-in.-diam. horizontal bars in the compression area, three horizontal $1\frac{3}{8}$-in. diam. bars in the tension area, $1\frac{1}{2}$ in. above the bottom surface of the concrete, and two sets of three bent bars of $1\frac{3}{8}$ in. diam. The upper and lower horizontal bars are connected by vertical bars $\frac{5}{16}$ in. diam., the ends being turned over the horizontals. The vertical bars are wired to the bent longitudinal bars, and the whole reinforcement formed a rigid framework before it was placed into the mould. The vertical bars for resisting shearing stresses are spaced apart at distances increasing from $4\frac{1}{2}$ in. at the supports to 18 in. at the centre of the beam. The section A—A in Fig. 35 gives details of the reinforcement in the longitudinal beam shown in the upper drawing. In Fig. 33 may be seen particulars of a wall bracket suitable for the attachment of a pedestal for shafting. The formation of brackets in this way saves hacking the walls about, and affords a far better connexion than would be given by the usual bolts and nuts. Although this bracket may seem an insignificant detail, it is sufficient to suggest the great adaptability of concrete-steel to architectural and other requirements.

From the foregoing particulars a good general idea may be obtained of the main features of the construction exemplified in this building. We may point out, however, that the design of the walls and floor slabs is of distinctive character, and that exceptional provision has been made for withstanding shearing stresses in all the members subject to flexure, as well as for obviating voids in the concrete and other defects due to carelessness or want of skill on the part of the workmen. The mechanical principles taken into account by the designers are those discussed in our previous series of articles, and in applying them the following were the chief data:—Ultimate compressive strength: cinder concrete = 36,000 lb. per sq. in., stone concrete = 52,000 lb. per sq. in., factor of safety = 6; steel = 80,000 lb. per sq. in., factor of safety = 4. Ultimate tensile strength: concrete = 0, steel = 80,000 lb. per sq. in., factor of safety = 4. Adhesion between concrete and steel = 80,000 lb. for a bar having a length twenty-six times its diameter.

The moulds employed during construction were of very simple design, as may be seen by inspection of Figs. 37, 38, and 39. Part of an interior column mould is illustrated in Fig. 39. The boards forming the three fixed sides were carefully planed and secured by vertical battens, and the boards finally constituting the fourth side were nailed on, one after the other as the concrete was deposited. The first stage in the making of a column was to put the vertical reinforcement in place, with the horizontal ties at the top, as shown in Fig. 39. Two of the front boards were then nailed on, concrete was shovelled in to the depth of 12 in., and one transverse tie slid down so as to rest upon the surface of the concrete. The same series of operations was repeated until the work reached the top of the mould.

Part of a wall mould is shown in Fig. 37. The sides were formed of 1-in. boards, planed on face and edge, clamped together by horizontal battens, and kept at the proper distance apart by short pieces of board nailed upon the top at suitable intervals. The drawing represents the mould ready for continuing part of a wall already commenced. In building the first course of the wall the mould was set upon the ground, which was rammed and carefully levelled, and the mould was held in position by means of struts on either side. Three days were allowed for the concrete to set, the sides of the mould were then loosened and the mould raised to the position indicated in Fig. 37, where it was held by inserting and tightening the bolts. The sleeves through which the bolts passed were simply of cardboard, this being quite sufficient to prevent the concrete from adhering to the metal, and so obviating any difficulty in the way of removing the bolts.

The wall moulds were made in sections, each 16 ft. long by 3 ft. high, fitting between the wall columns.

Fig. 38 shows part of a girder mould and of the boarding for the floor slab. The bottom of the mould consisted of a board or plank, from 1 in. to 3 in. thick, according to circumstances, and attached to the sides by screws passing through longitudinal fillets, as shown in the sketch. The sides were formed of vertical boards 4 in. wide by $\frac{7}{8}$ in. thick, nailed to top and bottom longitudinal fillets, 4 in. wide by 2 in. thick, and also by a third fillet really provided for supporting the 4-in. by 6-in. timbers carrying the floor slab falsework. For the support of the girder moulds, 6 in. by 8 in. struts were wedged beneath short pieces of board acting as caps, as shown in the figure.

After the girders and floor slab had been formed and allowed to harden for about seven days, the floor centring was struck by turning the 4-in. by 6-in. timbers on to their sides, permitting the floor boards to follow. In another week the sides of the girder moulds were removed, and the girders remained with the bottom board in place for a further period of three weeks, on the expiration of which the wedges between the struts and the cap boards

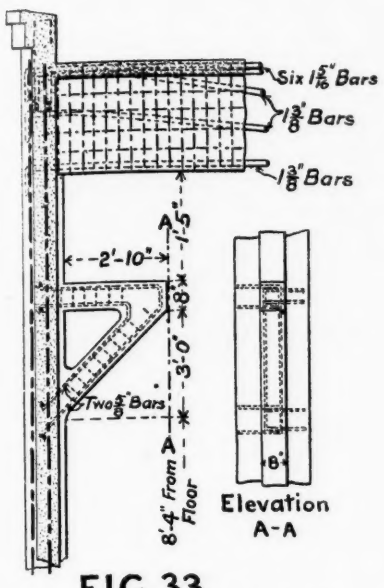

FIG. 33.

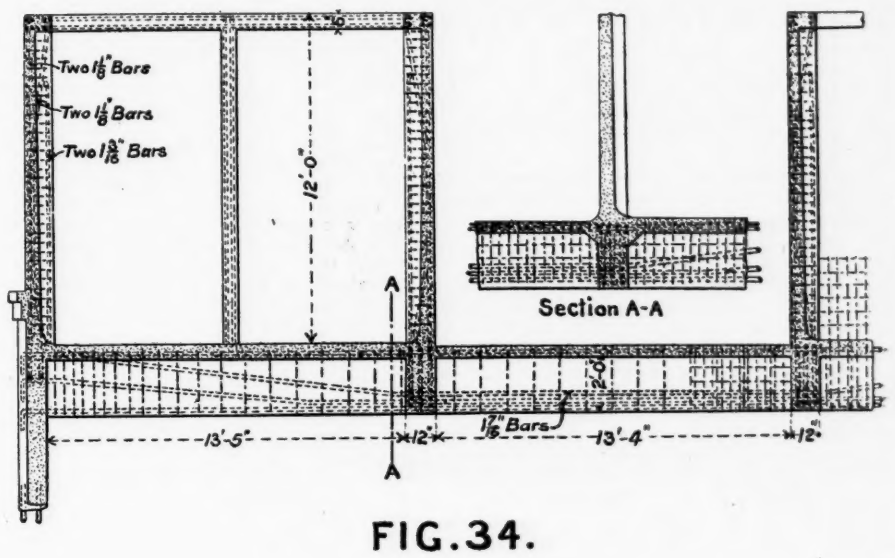

FIG. 34.

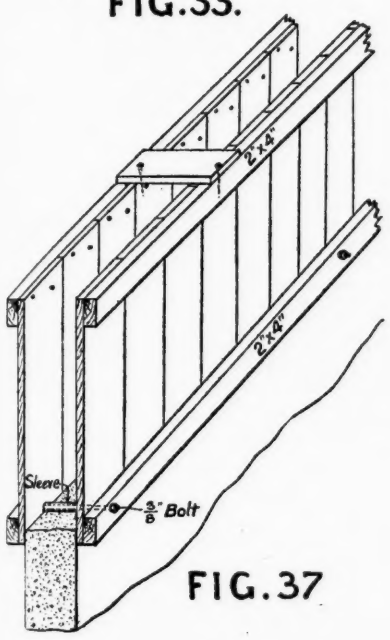

FIG. 37.

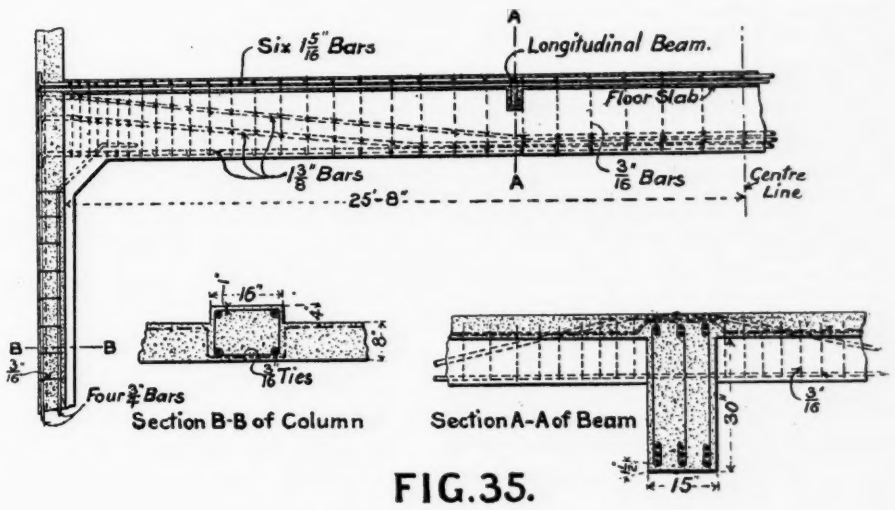

FIG. 35.

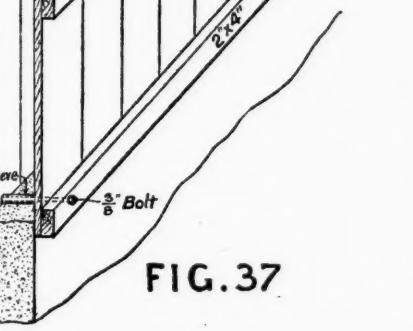

FIG. 38.

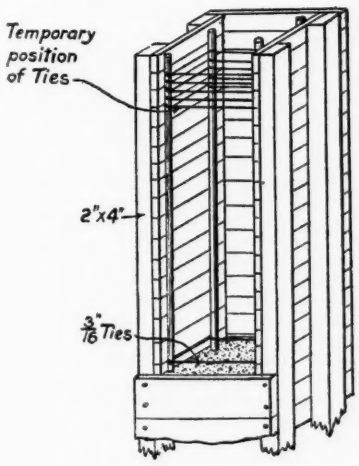

FIG. 39.

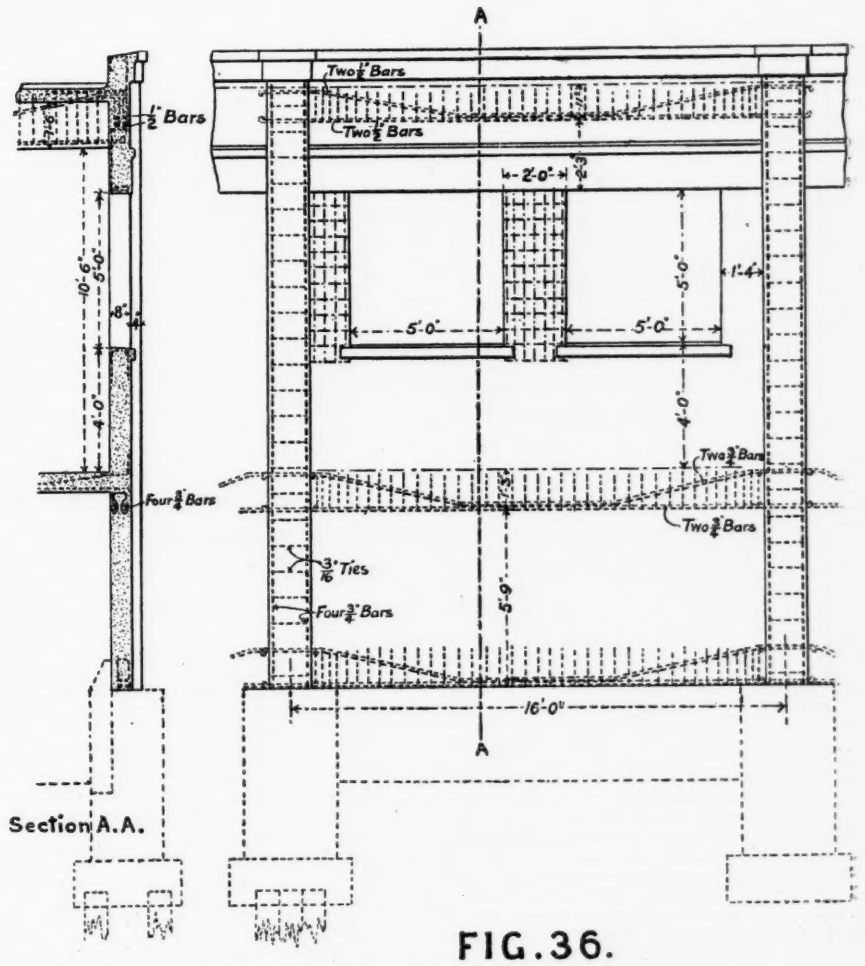

FIG. 36.

Illustrations to Student's Column.

were knocked away, and the girders were left for another week with the struts in position and ready to afford support in case of failure. The advantages claimed for this method of hardening are that the free access of air facilitates the setting of the concrete, and at the same time offers safeguards in the event ot collapse through unsuspected defects of any kind.

One point to which special attention may be drawn is that the reinforcement of the various members was wired and otherwise fixed in the moulds, so that displacement of the bars became practically impossible, or at all events extremely unlikely. Considerable care was taken with the view of insuring a good bond between new and old work. Generally, it was found that an interval of about twelve hours did not interfere with satisfactory union, but in cases when a longer stoppage of work became necessary, the existing surface was well washed and covered with a thin layer of mortar before the resumption of concreting. All junctions were strengthened by the insertion of steel netting of the kind already described.

With the object of verifying the correctness of the calculations, three test beams were made by the engineers, these beams having a clear span of 20 ft. The general result of the trials was that each beam showed cracks at the lower surface of the concrete when the load was approximately equal to the calculated amount.

COURT OF COMMON COUNCIL.

THE usual fortnightly meeting of the Court of Common Council was held at the Guildhall on Thursday last week.

Duke's Head-passage.—Among the documents for the City Seal was an agreement made between the Corporation and the Ecclesiastical Commissioners, whereby the former body agreed to pay the latter a sum of 500*l.* for the removal of the archways with the rooms thereover at the east and west end of Duke's Head-passage.

St. Bartholomew's Hospital.—On the recommendation of the Streets Committee, it was agreed to sanction the carrying out of certain works in connexion with the erection of the new out-patients' department at this hospital. It was resolved also to relay a portion of the carriageway of Finsbury-circus with macadam, at an estimated cost of 450*l.*

Tramways on the Embankment.—The Streets Committee submitted a report on this matter, and recommended that the Corporation should not consent to the proposed tramways within the City. Mr. A. C. Morton, in moving the report, said that while it was to the interests of the City to get people into the City quickly, he was afraid that the proposed scheme could not be carried out without greatly interfering with the traffic. Mr. Wm. Cooper moved as an amendment that the report be referred back, and further consideration of the whole matter adjourned until the report of the Royal Commission on London Traffic is published. He considered that the Corporation were not called upon at the present time to say yea or nay; they ought to wait until the whole matter was before them. This was seconded by Deputy Parnell. Several other amendments were moved, but, after a long discussion, the Committee's recommendation was finally agreed to.

London Building Acts Amendment Bill.—The following motion by Mr. Deputy Parnell was agreed to:—"That the London Building Acts Amendment Bill be referred to a special committee consisting of the nine members (appointed by the three committees to whom the Bill has been referred), with power to retain counsel, obtain evidence, and take such other steps as may be deemed advisable, reporting thereon from time to time to this Court as may be necessary, and that the resolution of the Court of January 12 last be varied accordingly, and, further, that all references appertaining to the matter be transferred to the said special committee."

MISSION BUILDINGS, ISLINGTON.—Messrs. Patman & Fotheringham ask us to mention that they were the contractors for this building, briefly mentioned in our last issue.

MEMORIAL BUST, NEWCASTLE-ON-TYNE.—It was decided, on the 7th inst., by the Laing Presentation Committee, under the presidency of Alderman Newton, to appoint Mr. C. Neuper, of Newcastle, the sculptor of a marble head of Mr. Alexander Laing, to be placed in the new Art Gallery, to commemorate the generosity of that gentleman in giving the building to the city. The bust is to be of life-size, 2½ ft. in height.

OBITUARY.

M. ERNEST BARRIAS.—French art has lost a great sculptor by the death, last Saturday, of M. Ernest Barrias, at the age of 63. Born at Paris in 1841, Louis Ernest Barrias studied under Léon Cogniet, Jouffroy, and Cavelier. In 1860 he obtained the Second Prix de Rome for his "Chryseis," and in 1865 the Grand Prix in sculpture for his "La Fondation de Marseille." His first work sent from Rome, "Jeune Fille de Mégare," at once indicated the important place he was likely to take in contemporary art. His last work sent from the Villa Medici, "Le Serment de Spartacus," is in the garden of the Tuileries. The annual Salons were so many triumphs for him, the greatest being in 1878, with his group of the "Premières Fanérailles," now in the Petit Palais. Among his best known and most important works are the "Defense de Paris," which decorates the rond-point at Courbevoie; the "Defense de St. Quentin," and the fine monument to Victor Hugo erected at Paris two years ago. Then there are the works executed for the Hôtel de Ville at Paris; the "Bernard Palissy" at Boulogne-sur-Seine, the monument to Emile Augier, and "La Nature découvrant ses Secrets," now in the Luxembourg museum. Besides his great genius for composition, Barrias rejoiced in an exceedingly keen sight, which contributed to give him great power as a portrait sculptor. He was the author of many portrait busts of the highest order, notably those of Jules Favre, of Marmontel, of Couture, and of his brother M. Felix Barrias, who, though much his senior, survives him. Barrias was a great artist, and his death is lamented in the world of French art by all who knew either the sculptor or his works.

MR. JOHN LEANING.—We greatly regret to record the death of Mr. John Leaning, which took place on Sunday last from heart failure resulting from an operation for appendicitis on the previous Friday. Mr. Leaning was born at Colchester in 1840, was educated there, and afterwards emigrated to Australia, where he was engaged in the office of the Surveyor to the Crown Lands at Melbourne. He returned to England in 1868, and devoted himself to quantity surveying, and in 1880 published his well-known work on that subject. That work has had a wide circulation, and is now in its fourth edition. Other works by him are:—"Conduct of Building Work" (1895) and "Building Specifications" (1901). He has been engaged upon many important public works for the London County Council, and recently for the Admiralty and other public bodies. He was an examiner at the City of London College and one of the original lecturers at the Architectural Association. He joined the Surveyors' Institution in 1888. In later years he acted in many building arbitration cases, both as expert witness and arbitrator. By his unfailing faithfulness to his duty, his integrity, and his untiring energy he won the respect and goodwill of all with whom he was concerned. He had recently written a paper for the Surveyors' Institution on "Uniformity of Practice in Quantity Surveying," which was to have been read this session.

MR. ASTON.—The death, on January 29, at Limefield, Bollington, is announced of Mr. Walter Aston, of King-street, Manchester, in his 44th year. Mr. Aston was elected a Fellow of the Royal Institute of British Architects in January, 1901; he was a Fellow of the Manchester Society of Architects and a member of the Lancashire and Cheshire Antiquarian Society. Mr. Aston was the architect of the "Fence" almshouses and the "Olde Shoppe" at Macclesfield, and of the Wesleyan day and Sunday schools in Old Chapel-lane, Rainow, Cheshire. We gather that he acted as assistant to Mr. James Stevens, of Macclesfield, in the restoration, 1882-92, of the parish church of St. Michael in that town.

BUILDING BY-LAWS (RURAL).—On the 23rd inst. Mr. Walter Long, President of the Local Government Board, will receive a deputation of members of the National Workmen's Housing Association, and of some rural district councils, who will submit their views in favour of building by-laws that shall be based upon the following principles:—

(*a*) By-laws are absolutely necessary, and their enforcement is a duty.
(*b*) They should contain nothing that hinders the construction of good cottages.
(*c*) In any modification in respect of material, health, safety, and stability must be safe-guarded.
(*d*) In any modification as to the mode of building, recent calamities, due mainly to the use of unsuitable materials, must be considered.
(*e*) A proper definition of a room is desirable.

The secretary of the Housing Association is Mr. Williams, of No. 10, Clifford's-inn.

GENERAL BUILDING NEWS.

BAPTIST CHURCH, NEWCASTLE-UNDER-LYME.—A Baptist church and schools, etc., are about to be erected at Newcastle-under-Lyme. The schoolroom or assembly hall will be placed under the church, this being necessary owing to the narrowness of the site. It is proposed to use red terra-cotta for the elevations, and grey for the interior. The figurework and enrichment will be modelled by Mr. Watson, of the Birmingham School of Art. The buildings will be heated on the low-pressure system. Fireproof floors and materials will be used wherever possible. Mr. E. Stanley Mitton, of Birmingham, is the architect.

WESLEYAN CHURCH, BENTON.—The Wesleyans at Benton formally opened their new church lecture hall on the 1st inst. When the buildings are completed they will embrace a chapel to seat 500, a lecture hall with seating accommodation for 250, with large classrooms, vestries, etc. Messrs. Marshall & Tweedy, Newcastle, are the architects for the buildings.

WESLEYAN CHURCH AND SCHOOLS, NORTHAMPTON.—The new church and school buildings, which have been erected in connexion with the Regent-square Wesleyan Methodist Church, Northampton, were recently opened. The architects were Messrs. H. H. Dyer, Son, & Winterburn. On the ground floor there is a parlour, a young men's room, and classroom, all leading out of an entrance hall. On the first floor there is a lecture hall with platform, and a class or retiring-room. The necessary equipment for teas, etc., is provided in the basement. A lift runs from the basement to the classroom adjoining the lecture hall. The building is heated throughout with hot water on the low-pressure system. The builder was Mr. H. Higgs, who secured the contract at 1,510*l.* The hot-water apparatus was erected by Mr. Marriott, of Higham Ferrers. The electric light was installed by Mr. Mansell, and the decorations were carried out by Mr. Hanwell. It is estimated that the whole scheme will cost 2,200*l.*

WESLEYAN SCHOOLS, LEEDS.—The new Sunday schools in connexion with the Burley Wesleyan Church, Leeds, were opened on Saturday last. The new schools, which adjoin the church, and have a frontage on to Burley Park, comprise a schoolroom, infants' room, and nine classrooms. The building is 63 ft. long and 31 ft. wide, and is lighted at the front by two traceried windows, on the sides by six more traceried windows, and over the platform by a large circular window. On one side of the main room are four of the classrooms, which, by means of folding partitions, can be opened out into the schoolroom. Communication with the church is made by way of corridors, two stone staircases being arranged for the scholars to have direct access to the gallery. The heating is on the low-pressure hot-water system, and the lighting is by electricity. A detached residence is provided for the caretaker. The building, like the church, is of stone in the Decorated style, from the designs of Messrs. Danby & Simpson, architects. The principal contractors were Messrs. Ledgard & Son and Mr. Walter Colley.

WESLEYAN SCHOOL HALL, ROUNDHAY, NEAR LEEDS.—The new Wesleyan school hall, which has been erected in Lidgett Park-road, Roundhay, was opened a short time ago. The building has an open timber roof, and will accommodate about 150 persons. It consists of a school hall, with two classrooms and lavatories, etc., on the ground floor, and a kitchen and storerooms in the basement. The hall is separated from one classroom by a sliding shutter, which can be removed to increase accommodation at meetings and services. A lift connects the kitchen with the hall. The building has been constructed of local stone, in the Early English style. Mr. W. H. Beevers, of Leeds, is the architect. The portion of the scheme already carried out has cost about 2,600*l.*

Y.M.C.A. BUILDINGS, MORPETH.—New premises for the Young Men's Christian Association have been opened at the corner of Market-place and Oldgate, Morpeth. The architect for the work was Mr. J. W. Taylor, Newcastle, and the contractor Mr. Jackson, of Rowland's Gill and Newcastle.

ALTERATIONS TO THE CENTRAL FREE LIBRARY, BRADFORD.—Alterations are now being carried out at the Bradford Central Free Library, incidental to the removal of the art collections to the Cartwright Memorial Hall. The plans have been prepared by the City Architect, Mr. F. E. P. Edwards, in consultation with the City Librarian, Mr. H. Butler Wood. In the conversion of the Art Gallery into a library, nine windows, which have been blocked up to make wall space for pictures, will be opened out. The present galleries will be divided by three glazed partitions.

The first of these apartments will provide a magazine-room, the second is to be used as a reference library, with a reading-room attached, and the third will be sub-divided to accommodate the assistant-librarian in charge of the reference library, and to provide a room for students. Shelving space in the area allotted to the reference library will be constructed, in nine book-stacks, to accommodate 51,000 volumes. The space in the existing reference library will be entirely rearranged. The present ladies' room will become a work-room for the staff, with bookshelves for about 10,000 volumes. The ladies' room will occupy the place of the present bookcases for the reference department. The present magazine-room will become the lending library. Beyond the counters, bookshelves will be provided for about 30,000 volumes, as compared with 25,000 volumes at present on the shelves. The removal of the lending library will enlarge the newsroom, which will then have tables for eighty-four persons, and a larger number of newspaper racks. There will be a complete system of mechanical ventilation, and the present heating arrangements are to be improved. The cost of the alterations will be over 2,200*l.*

PUBLIC SCHOOL, LOCHWINNOCH.—This new school has just been opened. Four classrooms are provided on the ground floor and six on the upper floor, each for sixty scholars. The hall is in the centre of the school, behind the front range of classrooms. Male and female teachers' rooms are provided on the ground floor, and assistant teachers' cloakrooms and lavatories on the upper floor. Cloakrooms and lavatories for the scholars are provided immediately inside the main entrances. One of the upper rooms is arranged suitable for cookery classes, and another can be adapted for drawing, while physical instruction can be taught in the hall. The whole school is heated by hot-water pipes and radiators from an independent boiler in the heating chamber, and fresh warm air is admitted into all the classrooms by means of inlets all round the building in connexion with the heating radiators. The vitiated air is extracted by means of ducts from the walls and ceilings connected to ventilators on the roof. The cost of the building will be about 10,000*l.* The architect is Mr. C. Davidson, Paisley.

PUBLIC HEALTH LABORATORIES, MANCHESTER UNIVERSITY.—The new buildings are now completed, and will provide facilities for the study of all home diseases. They have been erected from plans prepared by Professor Capper and the Director and Secretary, Professor Delepine. On the ground floor are a large chemical laboratory, two bacteriological classrooms, one of which is fitted with five cubicles for advanced research work, two large rooms for general research and available for use by public authorities, rooms for dissection and photography, and an apartment reserved for clinical pathology, to be used by the staff of the Royal Infirmary, for which an adjoining site has lately been secured. On the first floor are the museum, Professor Delepine's offices and special laboratory, and the library, which already contains some 3,000 books relating to pathology and public health. The buildings stand near Owens College; they are constructed of red brick.

BUSINESS PREMISES, DUNDEE.—Alterations and additions are now being carried out at the premises of Messrs. J. A. MacLean & Sons, in South Tay-street, Dundee. The work has been planned by Mr. James Sibbald, architect.

FREE LIBRARY, LITTLEHAMPTON.—The laying of the foundation-stone of the Littlehampton Free Library will take place shortly. The new building will stand on a site at the corner of Maltravers-street and Fitzalan-road. Mr. Walter Willis has secured the contract for the structure at 2,197*l.*, and has to complete within six months. Mr. H. Howard, Surveyor to the Littlehampton Council, is the architect.

CARDIFF MUSEUM AND ART GALLERY.—A meeting of the Cardiff Museum and Free Libraries Building Committee was held on the 1st inst. for the purpose of considering the amended plans and specifications of the proposed new museum to be erected in Cathays Park, at an estimated cost of between 150,000*l.* and 160,000*l.* It was recommended to the committee that only the central block and the western wing, which the architect, Mr. Edwin Seward, estimates to cost 23,876*l.*, exclusive of architect's fees, bills of quantities, and the salary of the clerk of the works, should be proceeded with. The plans, so far as the central block and western wing were concerned, were approved and adopted, and it was decided that the work should be carried out at a cost not exceeding 25,000*l.*, the same to include the architect's commission, bills of quantities, and the clerk of the works' salary. The front of the building is to be built of Portland stone, to harmonise with the new town hall and law courts.

INEBRIATES' HOME, CATTAL.—The Yorkshire Inebriate Reformatory at Cattal, near York, which is to be opened in March, will have accommodation for about eighty patients—sixty women and twenty men—besides the arrangements necessary for the administrative staff. The building is so planned that it can be enlarged, if necessary, until ultimately accommodation is found for 250 patients. It has been designed by Mr. Vickers Edwards, the West Riding architect, and the estimated cost is about 30,000*l.*

MUNICIPAL BUILDINGS, SOUTH SHIELDS.—Within the next few months, the foundation-stone of the new municipal buildings at South Shields will be laid on the site situate at the corner of Ogle-terrace and Westoe-lane. The Town Council at their last meeting decided to advertise for tenders for the erection of the building from designs prepared by Mr. Ernest E. Fetch, architect, of London.

WOMEN'S HOSPITAL BUILDINGS, BIRMINGHAM.—New buildings are being erected for the Birmingham and Midland Hospital for Women. The Convalescent Home, which stands a short distance away from the main hospital, and upon the other side of Park-road, is quite finished, and has just been opened. The convalescent home is two stories, the lower part of the façade being in red brick, and the upper in white stucco. It will afford accommodation for twelve patients. It is planned with a centre portion and two wings. On the right of the entrance are the matron's sitting-room and the patients' day-room, measuring 22 ft. by 16½ ft.; also a dining-room, 20 ft. by 14 ft. At the left or eastern end are the kitchen, clothes store, and other accommodation. Upon the upper floor are two dormitories, each containing five beds, and one with two beds, bedrooms for the matron and servants, and linen store. An external iron staircase, for use in case of fire, is provided, in addition to the internal means of ascent. The main hospital is in the Queen Anne style. The administrative block, a detached nurses' home, and a laundry, have their front to Showell Green-road. Behind the central entrance to the administrative buildings a corridor extends to the hospital, of which the principal apartments are four wards, two upon the ground floor and two upstairs. Each of these will contain ten beds. The upper wards have open balconies on three sides. There are also four small wards, containing two beds each, two operating-rooms, and store and service accommodation. On the south side a small detached building will have two wards, one bed to each, for special cases. The upper wards are both furnished with external fire-escape staircases. The buildings have been designed by Messrs. Martin & Martin, and the contractor is Mr. C. Gray Hill, of Coventry.

SANITARY AND ENGINEERING NEWS.

WATER TOWER, NEW BRIGHTON.—The new reservoir and water tower at Gorse-hill, New Brighton, which have been erected for the purpose of supplying the high lying districts of New Brighton, are now complete. The work has been carried out from the designs of Mr. J. H. Crowther, Gas and Water Engineer to the Wallasey Urban District Council, by Mr. John Gourley, engineer and contractor, Liscard and Liverpool. The site selected for the reservoir was of a rocky nature, and 28,000 yds. of rock had to be excavated in order to provide the necessary space for the reservoir, which is 312 ft. in length, with an average width of 120 ft., and depth of 20 ft. 6 in., giving a capacity of four and a quarter million gallons. The reservoir is lined throughout with bitumen sheeting. The tower, which is octagonal in shape, with a platform on top, is built of red Runcorn stone, partly faced with brickwork inside. The tank, which is placed about 60 ft. above the roadway, has a capacity of upwards of 70,000 gallons, and is supplied by a 21-in. pipe leading from the Vyrnwy supply, and also with an 18-in. pipe from the pumping station at Liscard, both of which can be run direct into the reservoir if required.

RAILWAY EXTENSIONS, LIVERPOOL.—The work in connexion with the widening of the line between Kirkdale and Walton Junction, on the Lancashire and Yorkshire Railway, has been completed. The old tunnel, which commenced at Kirkdale Station and continued to within a short distance of Walton Junction, was 1,149 yds. in length, and two lines which were used by both fast and slow trains met the requirements of the railway company up to a year or two ago, when, in consequence of the congested state of the traffic, it was deemed advisable to make some alterations in the system. The execution of the contract commenced at Kirkdale Station, over two miles from Liverpool, the termination being at Walton Junction Station, over three miles from Liverpool. The tunnel has been shortened at each end by about 160 yds., and opened out in the centre for a length of 111 yds. Alongside the old tunnel new tunnels have been constructed for two lines of way, of a similar length to the old tunnel as altered, and the line has been doubled so as to provide four lines of way between Walton Junction and Sandhills. Alterations have been effected at Kirkdale railway station. Covered entrances and staircases to the two platforms have been erected, and the middle platform has been lengthened. The contractors for the main portion of the work are Messrs. J. D. Nowell & Sons, Victoria-street, Westminster, and the whole of the work has been designed and carried out under the direction and supervision of Mr. W. B. Worthington, Chief Engineer to the Company, and his resident engineer in Liverpool, Mr. M. Glen Ross.

SEWAGE SCHEME, TOTNES.—At Totnes on the 2nd inst. Mr. H. Ross Hooper, Local Government Board Inspector, held an inquiry relative to an application of the Corporation for leave to borrow 6,800*l.* to complete its sewage scheme. The Town Clerk (Mr. E. Windeatt) said the sewage was taken down a tidal river, and as there was no manufacture in the town the scheme was purely for sewage. With reference to the outfall works, the Council was prepared to erect tanks and filters, but objected to 494*l.* for irrigating the land at the outfall works. The Council contended that the septic system was not required, the river being quite sufficient, as there were two tides each day. There were also heavy floods in the summer. Out of 650 inhabited houses in the borough fifty would not be connected in the system. Mr. Ware, C.E., also gave evidence, and the inquiry closed.

FOREIGN.

FRANCE.—Mdlle. Dufau and M. Ernest Laurent have been commissioned to execute for the Salon "Des Autorités" at the Sorbonne, eight decorative panels. Two large wall-paintings have also been commissioned from M. Henri Martin, to decorate the gallery which runs round the principal courtyard. M. Aman-Jean has been commissioned to paint a large composition for the amphitheatre of Physiology, and M. Dewambez is to execute, in the Council-room of the University, a painting of a modern subject. M. René Ménard has received a commission for a frieze for the Ecole des Hautes Etudes. M. Roos has been commissioned to paint an allegorical picture for the Collége de France; and M. La Touche a panel for the Elysée, representing a "Fête de Fruit." M. Lucien Simon is to paint some figure and animal pictures for the veterinary school at Lyons.——A committee has been formed to raise a monument to Daubigny at Anvers-sur-Oise.——The Municipality of Fontainebleau has opened a competition for a new theatre.——A competition has been opened at Auch for the building for a new Prefecture, to cost 700,000 francs. There is shortly also to be a competition for a new prefecture at Toulouse.——M. Max Raphael, architect, of Nîmes, has been elected president for this year of the Société Departmentale des Architectes du Gard.——The discovery is announced, at Redon, of a Romanesque crypt of the XIth century, beneath a portion of the church.——A committee has been formed at Annecy to raise a monument to Eugène Sue.

GERMANY.—The new Catholic church at Königshütte in Upper Silesia, after plans by Professor Josef Schmotz, will be built in the form of a Basilica.——The Exhibition of Arts and Crafts, to be held in the National Museum at Munich this year, promises to be unusually interesting and complete, as the exhibits sent by this town to the St. Louis Exhibition will be utilised.——The new church at Breslau is to be built from the designs of MM. Gaze & Böttcher, at a cost of 550,000 marks.——The new Orphanage at Godesberg, built in Romanesque style by the architect Herr Friedrich Schutte, was opened last October.——The hospital at Munich, built by the MM. Heilmann & Littmann, under the direction of the architect Herr Stempel, is now in use.——The Gymnasium at Zehlendorf, near Berlin, a building in German Renaissance style from the designs of Herr Franz Thyriot, is completed.——The Town Hall at Ratisbon, a very ancient and interesting building, is being restored; a committee has been formed to superintend the work, consisting of antiquaries, architects, and members of the Town Council.——The Town Hall of Friedrichshafen is to be rebuilt from the designs of MM. Eisenlohr & Weigle.

SWITZERLAND.—Professor Hans Bachmann, of Lucerne, has nearly completed two large pictures representing the "Death of Gessler," and the "Death of Wilhelm Tell"; the paintings are to be placed in the "Tell" chapel at Küssnacht, which has lately been restored.——

The tower of the church at Hausen is to be rebuilt, and the church itself restored, under the direction of the architect Herr R. Kuder, of Zurich.——The Town Council of Lausanne, in order to meet the overcrowding of the schools, has decided to erect two portable school pavilions.

AUSTRIA.—The theatre at Bielitz is to be rebuilt from plans by MM. Fellner & Helmer, at a cost of 100,000 kr.——A new church is to be built at Mähr-Ostrau, from plans by MM. Troll & Feigl.

PUBLIC WORKS IN VIENNA.—It is stated that the Municipality of Vienna will shortly invite tenders for the execution of several important works, viz.:—Extension of the tramway system, estimated cost about 256,000*l.*; establishment of a second water system, 120,000*l.*; construction of bridges, 250,000*l.*; paving works, 112,000*l.*; construction of a market, 17,000*l.*; provision of a central abattoir, 20,000*l.*; erection of a museum, 2,000*l.*; works at the central cemetery, 54,000*l.*

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Marchant & Co., the present owners of the Goupil Gallery, in Regent-street, have opened additional premises at 2, Haymarket.——The practice of the late Mr. John Leaning will be carried on by his two sons, Messrs. Henry & William Leaning, who since 1900 had been in partnership with their father under the name of "John Leaning & Sons." The name of the firm will be retained unaltered.

GRAMMAR SCHOOL, FARNHAM.—The governors have appointed Messrs. Jarvis & Richards, of London, as architects of the new buildings. The school was originally established at Farnham, in the county of Surrey, in a remote period, and was refounded and endowed in 1611 by Dr. J. Harding, President of Magdalen College, Oxford. The school was re-established about sixty years ago; in 1872 new schoolrooms, with a dormitory, were built in West-street, and the premises were enlarged twenty years afterwards.

THE QUESTION OF INTERCEPTING TRAPS.—At the meeting of Lambeth Borough Council, on Thursday of last week, the following report by the Medical Officer of Health (Dr. Priestley) was submitted:—

"I have carefully considered the letter of the Town Clerk of Lewisham, dated December 2, 1904, together with the copy of the report of the Lewisham surveyor (Mr. Ernest van Putten), dated November 4, 1904, and am of opinion that the suggestion made therein for the removal of all intercepting traps, and the repeal of the London County Council Drainage By-laws, with reference to the compulsory provision of such traps, is one that is fraught with considerable danger to health, and should consequently be opposed at all costs."

The Borough Engineer (Mr. H. C. J. Edwards) reported stating that, in his opinion, until a more satisfactory arrangement was devised, it was scarcely practicable to do away with the intercepting trap. The following motion was adopted:—"That the Council do not co-operate with the Lewisham Borough Council in approaching the London County Council with the object of obtaining the repeal of the London County Council by-law which requires the provision of a suitable and efficient intercepting trap to every main drain, or other drain, of a new building; and that the Lewisham Borough Council be so informed."—Deptford Borough Council has concurred in the opinions expressed in the letter of the Lewisham Borough Council, and will co-operate in approaching the London County Council on the matter.—Shoreditch Borough Council has merely "received" the portion of the Lewisham Council's letter relating to surface ventilators. The Shoreditch authority will co-operate, however, in approaching the London County Council to have the by-law dealing with interceptors repealed.—Paddington Borough Council has decided to take no action on the letter of the Lewisham Borough Council with reference to the ventilation of sewers.

DISCOVERY OF A ROMAN KILN.—A discovery of great interest to antiquaries has been made at Worcester under part of the ancient half-timbered premises known as King Charles's House. Mr. A. E. Woodward was causing improvements to be made in the cellars when the displacement of some bricks led to the discovery of a Roman kiln in a perfect state of preservation. It is constructed entirely of ¾-in. tiles and cement, and exhibits no sign of having been used. It is just within the city wall, which dates back to the time of the Commonwealth; but the front of the house appears to be built upon a wall of Roman character, constructed of 2¾-in. tiles and 2½-in. bricks, laid alternately. Pieces of plastic fresco have also been found in the cellars.—*Times.*

CLOISONNE MOSAIC.—We mentioned some time ago a new system which the Arrolithic Company had introduced of setting mosaic between brass cloisons dividing up the principal sections of the design. One object of this was to simplify repairs by confining the disturbance of the cubes within a limited area. We have just seen a specimen of floor-work carried out on this system, in an elaborate design of mediæval character, in which the thin lines of the brass cloisons form an element in the design, somewhat as the leading does in a glass window, only that of course the cloisons are narrower in proportion than the leadwork.

WAR MEMORIAL, WINDSOR.—His Majesty King Edward recently visited the Church of Holy Trinity, Windsor, for the purpose of unveiling a memorial to the members of the Household Brigade who fell in the South African war. The memorial consists of a series of zinc panels framed in oak. The panels—eighty-five in number—extend along the entire length of the north and south walls of the church underneath the galleries, and upon them are inscribed the names of 742 officers and men who, in the words of the first and dedicatory tablet, "Died for the Empire in South Africa." The designer was Mr. T. C. Barfield, secretary of the Leicester Society of Artists; the heraldic work—namely, the panels on which the badges of the regiments and coats of arms and crests of deceased officers were painted—was executed by Mr. A. Cole, London; the lettering was the work of Messrs. J. & H. Ottrey, Windsor, and the oak framing by Messrs. Hollis & Son, Windsor. The first and dedicatory panel was designed and also executed by Mr. A. Cole, and bears at each end a representation of the late Queen's South African war medal and King Edward's war medal.

STREET IMPROVEMENTS, BRIGHTON.—An inquiry was held at the Town Hall, Brighton, on the 2nd inst., by Lieut.-Colonel A. C. Smith, R.E., Local Government Board Inspector, with reference to the application of the Brighton Corporation for sanction to borrow 1,000*l.* for the purchase of property for the purpose of widening London-road and Viaduct-road. The Town Clerk (Mr. Hugo Talbot) explained that the proposed expenditure was in continuance of a scheme for the improvement of London-road which the Corporation had been carrying out for some years past. Mr. Weller, Assistant Surveyor, said the total area of the land proposed to be acquired was 165 sq. yds. The effect would be to increase the width of London-road to 68 ft. 6 in. in one part, and 69 ft. 9 in. at the junction with Viaduct-road. The Town Clerk and Mr. Weller afterwards explained to the inspector the plans of the workmen's dwellings which the Town Council have built in Elm-grove for the purpose of accommodating people displaced by the widening of London-road.

CONFERENCE OF MASTER HOUSE PAINTERS AT DARLINGTON.—On the 24th ult. the second annual gathering of the Tees-side and District Federation of Master House Painters was held at the Technical College, Darlington. The retiring President (Mr. J. H. MacDermid) occupied the chair at the business meeting, when the following officers were elected for the ensuing year:—Mr. J. J. I. Smith, West Hartlepool, President; Mr. A. Jobling, Yarm, vice-president; Mr. S. L. Taylor, Middlesbrough, secretary; Mr. J. T. Burdon, West Hartlepool, treasurer; Mr. Joseph Scott, Darlington, and Mr. Alton, Hartlepool, auditors. The treasurer's statement, showing a satisfactory balance in hand, was adopted, and Bishop Auckland and District Association were admitted as members of the Federation. In connexion with the gathering an exhibition of apprentices' work was held in the new lecture-room of the college, and this was judged by Messrs. John H. Turner (Wakefield) and J. G. Cole (Newcastle). In their report they stated that they considered the work generally fairly good. In the evening the members dined together at the King's Head Hotel, Darlington, under the Presidency of Mr. J. H. McDermid, Mr. J. J. I. Smith being in the vice-chair. "The Tees-side Federation" was submitted by Mr. Bernard Biggs. In response, the President said that, as a federation, they were only a comparatively young body. They were not banded together to form a fighting machine in any sense of the word. Their chief object was education. They wanted to improve the future of their trade. They wanted it to become something more than a trade; there was no reason why it should not become a profession. It might be asked upon whom did the obligation rest to teach the young men the trade. He thought most of them would agree that a great deal of the responsibility for the education of the apprentice rested upon his employer. Largely bearing upon this was the co-operation of the trade federations with the technical schools. The work of one was the work of the other.—Mr. Pike Pease, M.P., proposed the toast of "Trade and Commerce," to which Mr. W. S. Reed (Sunderland) and Mr. Roberts (Crook) responded.—Mr. Jobling (Yarm) gave "The National Association of England and Wales," and Messrs. J. Brown (Newcastle) and Tetlow (Huddersfield) replied.—Mr. A. C. Coffin, B.A., submitted "The Institute of British Decorators," Mr. J. J. I. Smith responding.—Mr. J. Law gave "The Adjudicators," and Messrs. J. G. Cole and J. H. Turner responded.—Mr. J. H. Hill proposed "Our Visitors."—Mr. S. L. Taylor (Middlesbrough) submitted the toast of "The Local Committee of Arrangements," to which Mr. A. Armistead replied.

THE SLATE TRADE.—The foreign demand for Festiniog slates is reported to be very good, and the output for 1904 was less than 1903. In Carnarvonshire trade is improving, and the reduction of about 14 per cent. in lists, as compared with January, 1904, enables the quarry owners to compete successfully with foreign slates in price, as they have always done in quality.

LONDON DISTRICT SURVEYORS' ASSOCIATION.—The District Surveyors' Association, which has just completed the sixtieth year of its existence, has been incorporated under a certificate from the Board of Trade. Mr. Alexander Payne, having filled the office of President for two years, has retired, and Mr. Thomas Henry Watson has been elected President; Mr. E. Dru-Drury, vice-president; Mr. Frederick Wallen, hon. treasurer; and Mr. Henry Lovegrove, hon. secretary. During the past year there has been one death and three resignations of districts.

MASTER HOUSE PAINTERS.—The Executive Council of the National Association of Master House Painters and Decorators of England and Wales held their quarterly meeting at the Bull Hotel, Wakefield, on the 6th inst. The President, Mr. H. Vigurs Harris, was in the chair. It was decided that the surplus of 500*l.* from the exhibition at Manchester last year should be disposed of by grants of 100*l.* and 50*l.* respectively to the Painting School at Manchester, and the investment of 250*l.* in Consols, in the names of Alderman Kendall, chairman of the finance committee, and Mr. J. H. Turner, hon. treasurer. The award by Sir Thomas Drew of the International Travelling Scholarship to Roland Barker, of Leicester, was very favourably viewed. The Executive Committee decided to hold their next meeting at Bristol in May.

BRISTOL MASTER BUILDERS' ASSOCIATION.—On the 7th inst. the annual dinner of the Bristol Master Builders' Association was held in the hall of the Royal Hotel, the chair being taken by Mr. E. I. Neale, President of the Association. The loyal toasts having been honoured, the President said that it had been their painful duty that day to commit to mother earth one of their oldest and most highly respected members, namely, Mr. John Bastow, who had served his day and generation in a manner most exemplary, both to the Corporation of Bristol, the Board of Guardians, the members of that Association, and other bodies with which he was connected. He would suggest that a letter be addressed from that gathering to the bereaved family of Mr. Bastow, expressing its regret at the sad calamity that had befallen them and offering them their sincere condolences.—Mr. R. F. Ridd proposed "The City and Commerce." Alderman Godwin, in responding, said the trade of the old city had much increased, and there was room for further progress as long as they had the right people to look after public affairs. Mr. G. E. Davies also replied to the toast.—The next feature of the proceedings consisted of a presentation to Mr. George Wilkins, one of the oldest members of the Association, who is retiring from business. The President said they desired to recognise his long service to the Association and show the appreciation of the members. The Association had selected a silver salver, hand-hammered, and weighing 91 ozs., and it was engraved with the following inscription:—"The Bristol Master Builders' Association, 1905. Presentation by the members of this Association to George Wilkins upon the occasion of his retirement from business life, in recognition of the long and valued services he has given to the Association, extending over a long period, during which time he occupied the presidential chair for two years. . . ." The salver was then handed by the President to Mr. George Wilkins, who, in acknowledging the presentation, said he had been a member for thirty or forty years, and was able to speak of the better conditions under which the trade was carried on now compared with what prevailed formerly. As to the National Federation, out of fifty-four half-yearly meetings he had attended forty-five. Mr. H. J. Spear, as

having been connected with Mr. Wilkins in his official capacity for a long period, added a few words of appreciation, and then read a letter which Mr. George Humphreys, the treasurer, had written, expressing regret at his inability to be present. The writer bore testimony to the worth of Mr. George Wilkins, who had done so much during thirty years for the Association and for the National Federation of Master Builders.—Mr. Arthur Lee next proposed "The National and South-Western Federations of Master Builders of Great Britain." He said he would like to see the master builders combine to spread abroad a knowledge of the economic facts connected with their training, and then there would be less trouble and fewer contests between labour and capital. He remarked that the building trade was the greatest of all trades of the country, not excepting agriculture, and the condition of their trade was naturally an indication of the trade of the whole country. He was happy to believe that they had arrived at the bottom of the depression, and that they would have better times before them. Mr. A. Dowling and Mr. W. F. Long responded to the toast.—Mr. F. N. Cowlin submitted "The Engineers, Architects, and Surveyors." Mr. A. P. I. Cotterell and Mr. W. S. Skinner responded.—The toast of the "Visitors" was given by Mr. C. Cowlin, and acknowledged by Mr. T. S. Cotterell and Mr. M. Froud.—Mr. W. H. Brown, in submitting "Kindred Associations," said the creation of their Association had done much to improve trade, as it had afforded opportunities for smoothing over difficulties that might arise between the architect, builder, and workmen. The responders were Mr. F. J. Blackmore, Mr. A. J. Jenkins (President of the Bristol Cabinet Manufacturers' Federation), and Mr. R. W. Moon (Newport).—Mr. G. H. Perrin proposed "The Bristol Master Builders' Association." The President responded, and alluded to the necessity for safeguarding apprenticeship, so that they might have more efficient workmen in the future. Mr. Ridd also spoke to the toast.

OPEN SPACES, RECREATION GROUNDS, AND TREE-PLANTING.—It is stated that the Corporation of Lambeth have promised to contribute an additional sum of 2,000*l.*, and that 1,500*l.* have been collected by the committee, towards the 12,000*l.* which are required to complete the purchase of the remaining 6 acres of fields which form the natural boundary of Brockwell Park which it is proposed to enlarge to that extent.——The grounds, nearly 2 acres, situated between Edith and Tadema roads, with a frontage to King's-road, Chelsea, which were formerly occupied as Messrs. Wimsetts' nursery, are about to be offered for sale, and an effort is being made to secure the land as an open space.——The local committee of the London Playing Fields Society have bought a large field in Whitchurch-lane, Edgware, which is being drained and levelled, and will shortly be available for cricket and football.——The London County Council's General Powers Bill contains clauses for the addition to Hampstead Heath of an area of about 80 acres in Hendon parish adjoining the lands owned by Eton College, for taking not more than 4 acres of their Avery Hill Estate at Eltham for purposes of a training college to be established in the house there, for effecting divers exchanges of property whereby certain lands now belonging to the Commissioners of Woods and Forests in the parish of Eltham and certain lands at Plumstead shall become portions of Eltham Park and Plumstead Common, respectively, as now vested in the Council, and for the acquisition of the Hackney Almshouses, in the Borough of Shoreditch, in order to enlarge the Hackney-road recreation ground, to be vested in the Borough Council.——The Metropolitan Public Gardens Association have prepared an amended plan, of which the Borough Council approve, for the laying out of the disused burial-ground belonging to All Saints' Church, Poplar, and are in correspondence with the Corporation of the City in respect of the proposed conversion as a riverside pleasure ground, with a steam-boat pier, of the site of Shadwell Fish Market, an area of nearly 8 acres; the Corporation purchased the market for 175,000*l.* as an accessory, rather than a rival, of Billingsgate Market, but the venture has not proved to be a financial success.——Through the agency of the Midland Reafforesting Association, of which Sir Oliver Lodge is President, a plantation of 6,000 ash and alder trees, laid out by Professor Fisher, has been made over 4 acres of the Travellers' Rest Mound, Wednesbury, by the Patent Shaft and Axletree Company, owners of the land, and a similar plantation has been made in front of the Haden Hill Colliery, at Old Hill.——The annual celebration of "Arbor Day," at Eynsford, in Kent, was recently observed by the planting, by students of the Horticultural College for Women at Swanley, by the children of the village, and others, of trees along the west side of the road leading to the railway station from the village. The custom has been observed there since 1897; the trees are set in form of an acrostic—on this occasion to express Browning's lines:—"The best is yet to be! The last of life, for which the first was made."

Legal.

BUILDINGS WRONGLY LICENSED BY BOROUGH COUNCIL:

CASE UNDER THE LONDON BUILDING ACT.

MR. LANE, K.C., the magistrate sitting at the West London Police Court, had before him, by adjournment on the 28th ult., after several lengthy hearings, a summons taken by the London County Council against the Fulham Football and Athletic Club, Ltd., for retaining a temporary building on their ground without obtaining the approval and licence of the London County Council, required under sections 82 and 83.

Mr. Bodkin, instructed by Mr. Childers, of the Solicitors' Department of the London County Council, supported the summons, and Mr. G. Humphrey, instructed by Mr. Blanco White, appeared for the Club.

The buildings, which were erected in August, 1903, afforded seating accommodation for 1,000 people, in tiers varying from 3 ft. to 30 ft. above ground, and comprised also in the lower portion dressing-rooms and bath-rooms, and lavatories for the players, also refreshment-rooms, storerooms, etc. The various rooms were lighted and warmed by gas, and a proper system of drainage, etc., was established. The buildings, except as to the materials and method of construction, had more the character of permanent buildings than temporary structures. They were constructed with wood framing braced in places with iron rods and straps, covered and enclosed externally below the tiers of seating with corrugated iron, and were also roofed with corrugated iron.

The contractors for the buildings, Messrs. Robert Iles, Ltd., of Fulham, erected them under a licence granted by the Fulham Borough Council for a temporary wooden structure for one year, on the condition that the structure was to be erected to the satisfaction of their officer, the Borough Engineer and Surveyor, which licence was renewed in September, 1904, for one year.

After hearing the evidence and the lengthy arguments of counsel, the magistrate decided that it was a composite structure, made of wood and iron, and therefore was within the jurisdiction of the London County Council, requiring their approval under section 82 of the London Building Act, 1894. The magistrate further made a demolition order that the buildings should be completely removed within five months (*i.e.*, the end of the present season), and imposed a nominal fine of 10s., each side to pay their own costs.

BUILDING OWNER'S ACTION TO RESTRAIN ARCHITECT ACTING AS ARBITRATOR.

THE case of Nye *v.* Crossley came before Mr. Justice Warrington, in the Chancery Division, on the 6th inst., an action by the plaintiff, a land owner of Brighton and Hove, against Mr. Crossley, a builder, and Mr. G. M. Jay, an architect, claiming a declaration that another architect, a Mr. Puttick, and not Mr. Jay, was the proper arbitrator under a building contract entered into between the plaintiff and Mr. Crossley, and the plaintiff also claimed an injunction restraining Mr. Crossley proceeding to arbitration before Mr. Jay, and to restrain Mr. Jay from holding the arbitration.

No evidence was called, it being agreed that the question involved turned on the construction of the contract. The facts of the case and the contentions of counsel sufficiently appear from the following judgment.

Mr. Justice Warrington, in giving judgment, said that in this case a dispute had arisen between the plaintiff and the defendant, Crossley, under a building agreement dated April 22, 1903, and the question he had to determine was whether the defendant, Mr. Jay, was the arbitrator agreed upon by the parties as the person by whom that dispute was to be solved, or whether, on the other hand, Mr. Puttick was the person agreed upon as arbitrator, or, in the alternative, whether there was any arbitrator at all, so that, having regard to the form of the agreement, the Court would have to appoint an arbitrator under section 5 of the Arbitration Act of 1889. The first question, if he was of opinion that Mr. Jay was the arbitrator agreed upon by the parties, was whether circumstances had arisen which would be sufficient to justify the Court in allowing plaintiff to revoke the submission to Mr. Jay which, by the Act, he was prevented from doing except by the leave of the Court. The facts were these:—In 1903 Mr. Nye had certain land upon which he desired to build some houses, and he accordingly procured plans, specifications, and bills of quantities to be prepared by the defendant, Mr. Jay, an architect. The defendant, Mr. Crossley, was employed by Mr. Nye to build the houses, and the terms upon which that business was to be done were regulated by the agreement in question, viz., the agreement of April 22, 1903. This agreement was made between the defendant, Mr. Crossley, described as the builder, of the one part, and the plaintiff of the other part. It provided, *inter alia*, that the builder should be paid so much by the plaintiff to erect and build for him on the piece of land in question certain houses, according to drawings, specifications, and quantities prepared by the architect, Mr. G. M. Jay, in a substantial and workmanlike manner, and, in all respects, to the reasonable satisfaction of the said architect. It was sufficient to say that the agreement provided, in the very usual manner, that the person described in the agreement as the architect was to determine the allowance of time in respect of strikes or inclement weather, and so on, and he was to give the certificates on which the purchase-money was to be paid. He was to be satisfied as to the construction of the buildings, and he was to direct the builder as to any alterations or deviations from the plans, and so on. Further, in the event of the builder becoming bankrupt, and the proprietor being entitled under the terms of the agreement to terminate it, then the proprietor was to pay to the builder such amount as the architect should award. Then, finally, there came the arbitration clause, which provided that, in the event of any disagreements between the parties in any way relating to the work contracted to be carried out, such matters should be referred to the architect, whose decision should be final and binding on both parties. Before going further, what was the meaning of the agreement? Mr. Jay was described as the architect, who had prepared the drawings, specifications, and quantities. The same expression, "the architect," was the only expression used throughout the agreement in connexion with the person who was to do the things he (his lordship) had enumerated. It seemed to him that, upon the true construction of the agreement, the person described as "the architect"—in other words, Mr. Jay—was agreed upon by the parties as the person by name who was to do the several things mentioned in the agreement, including that of finally deciding any question which might arise between the parties. If the construction he had put upon it was the true one, it was not competent for either Mr. Crossley or Mr. Nye to vary that agreement without the consent of the other in any particular. What happened afterwards was this. On April 17, Mr. Jay made a proposition to Mr. Nye in reference to the supervision of the work. That proposition had not been accepted on April 22, but certain verbal arrangements were made between Mr. Nye and Mr. Jay, and the result was put into writing by Mr. Jay on April 25—which was after the date of the agreement—in a letter. This letter stated that, in confirmation of the verbal arrangement, he (Mr. Jay) would undertake the sole supervision of the erection of the four houses for 2½ per cent. on the cost. It seemed to his lordship that that agreement was entirely separate from the agreement between Mr. Nye and Mr. Crossley. It would have been competent, as far as he could see, for Mr. Nye, if he had chosen, to appoint some other person to supervise the work, although he could not have altered the agreement. The work went on for some time, and two certificates had been given by Mr. Jay, when, on December 30, 1903, Mr. Nye's solicitors wrote a letter to Mr. Jay stating that, in the previous April, Mr. Jay had contracted to superintend the erection of the four houses on behalf of Mr. Nye, and that Mr. Jay had neglected to carry out his contract, that Mr. Nye would hold him responsible for any damage he might suffer, and that the contract must be considered at an end. What was the contract which was at an end? The contract of April 25. It could not be any other. That was the only contract then pending between Mr. Nye and Mr. Jay. Mr. Nye had put an end to the appointment of Mr. Jay as the person to supervise the work, but he had no power to alter the agreement between him and Mr. Crossley, and Mr. Jay remained the person to give the certificates, and to do other things mentioned in the agreement. Mr. Nye followed up the letter of December 30 by entering into an arrangement with Mr. Puttick, by which he was to take over and continue the supervision of the work in place of Mr. Jay, and he notified that to

Mr. Crossley by a letter, dated January 14. After that Mr. Crossley consented to apply for and accept certificates from Mr. Puttick, and when an occasion arose for certain alterations and deviations from the drawings, Mr. Crossley consented to accept his directions. The building work was finished, and disputes arose which came within the arbitration clause, and would properly be submitted to the arbitrator. As an incident in the case, his lordship said he ought to mention that Mr. Jay had in his possession certain papers, and, in particular, the bills of quantities. He was asked to deliver up the papers, and he said he would deliver up the bills of quantities, or copies of them, as soon as copies had been made. But the plaintiff appeared not to have been satisfied with that, and he issued a plaint in the County Court against Mr. Jay on February 10. Shortly afterwards Mr. Jay gave him copies of the bills of quantities, and then Mr. Nye withdrew the summons, and each party paid his own costs. On November 16, the building having been completed, Mr. Crossley, the defendant, wrote pointing out that the case was one which would have to be referred to arbitration, and on December 1 Mr. Puttick, acting, no doubt, under the directions of Mr. Nye, gave Mr. Crossley notice as arbitrator under the contract, appointing the following Tuesday as the day when he would hear the parties at his office, and proceed with his award. On December 2 Mr. Crossley, by his solicitor, wrote to Mr. Puttick refusing to recognise him as the arbitrator, and insisting that Mr. Jay was the arbitrator. That was followed up by a notice from Mr. Jay that he was the arbitrator under the contract, and that he took upon himself the duties of arbitrator, and he appointed a day for the hearing of the arbitration. Subsequently, there being these disputes, Mr. Jay consented to postpone the hearing for a week from December 12. On December 12 a writ was issued and notice of motion was given for an injunction. In his lordship's opinion the construction of the agreement, when one considered the position of the parties, was reasonably clear, viz., that they had decided to have the person who had prepared the drawings, specifications, and the quantities as the person who was to decide the questions between them. In his opinion, therefore, Mr. Jay was the arbitrator, and the arbitrator upon whom the parties agreed. It was then said that, even assuming that to be the true construction of the agreement, in the events which had happened, the parties had subsequently agreed to Mr. Puttick being substituted for Mr. Jay. He could not come to that conclusion. That was really the only question he had to decide except this, as to whether, assuming he was right in the decision he had come to on the construction of the agreement, circumstances had arisen which would justify him in allowing the plaintiff to revoke the submission. What had he here which induced him to hold that Mr. Jay would be biassed? It was said that there had been a dispute between Mr. Jay and Mr. Nye. That was quite true. Mr. Nye had accused Mr. Jay of being negligent in his agreement for supervision, and Mr. Jay had said, in quite temperate language, that he did not know what the negligence charged against him was. It seemed to his lordship that that was not enough. He was not to assume that because differences had arisen between the parties that Mr. Jay would, in a judicial capacity, show a bias against one of the parties. Then it was said that there had been actual litigation between Mr. Jay and Mr. Nye, and that, that being so, the case came within the ruling in Baring Brothers *v.* Doulton. Well, there had been litigation, if it could be said that the issue of the summons in the County Court he had mentioned was litigation. But he could not regard that as being enough to justify him in holding that Mr. Jay would bear such a grudge against Mr. Nye that he would not be impartial. He had to say whether, in his opinion, there was such a probability of bias on the part of Mr. Jay that he would not act properly as arbitrator. He could not say that. He must therefore refuse that part of the plaintiff's claim. The plaintiff had put his claim under different heads. He first alleged that Mr. Jay was not the arbitrator, and he secondly alleged that Mr. Puttick was. As the plaintiff had failed on both points on which he had sought to obtain the declarations, there must be judgment for the defendant, with costs.

Order accordingly.

Mr. Carson, K.C., and Mr. Beddall appeared for the plaintiff, and Mr. Rowden, K.C., and Mr. Mark Romer for the defendant, Mr. Crossley, and Mr. Norton, K.C., and Mr. Stone for Mr. Jay.

CLAIM BY BUILDERS AGAINST LIFT CONTRACTORS.

THE case of Cowtan & Sons, Ltd., *v.* Waygood & Co., Ltd., came before Mr. Justice Ridley and a special jury, in the King's Bench Division, on the 6th inst., an action by the plaintiffs, a firm of builders and contractors, against the defendants, contractors for the construction of lifts, for an indemnity against liability in respect of compensation paid by the plaintiffs to one, Jobelmann, under the provisions of the Workmen's Compensation Act under an award of the County Court judge of Westminster, including the costs of the proceedings. The defence was a denial of liability.

The short facts were as follows:—In October, 1903, the plaintiffs were engaged in doing work at a house in Grosvenor-square, and Jobelmann was employed by them as a painter. The defendants at the same time were, under a separate contract with the owner, constructing a lift on the premises, the structural work in regard to which had been done by another firm of contractors. The plaintiffs alleged that the defendants had control of the open shaft in which the lift was to run, and, in consequence of their failing to sufficiently protect the entrances to it, Jobelmann, who had been told to go upstairs to breakfast, fell down the shaft and sustained severe injuries. Jobelmann sued the plaintiffs under the Workmen's Compensation Act, and, in the result, an award was made in favour of the workman against the plaintiffs. On the application of the plaintiffs defendants were made third parties to the proceedings, and they now sought an indemnity against the defendants for the expenses to which they had been put on the ground that the accident was due to the defendants' negligence.

The defendants called evidence to show that there had been no negligence on their part, and that the accident was due to the contributory negligence of Jobelmann.

In the result, the jury, in answer to questions left to them by the learned judge, found that the defendants had possession and control of the shaft so as to place on them the duty of protecting the opening to it, but that defendants had not been guilty of negligence.

His lordship, on these findings, directed judgment to be entered for the defendants.

Mr. Robert Wallace, K.C., and Mr. G. A. Scott appeared for the plaintiffs, and Mr. H. F. Dickens, K.C., and Mr. A. B. Cane for the defendants.

ACTION AGAINST CONTRACTORS FOR ALLEGED NEGLIGENCE.

IN the King's Bench Division, on the 8th inst., Mr. Justice Ridley and a special jury concluded the hearing of the case of Phillips *v.* Kingston, Miller, & Co., Ltd., an action by the plaintiff, Mr. Lionel Phillips, of No. 33, Grosvenor-square, who sued the defendants, a firm of contractors, carrying on business in Oxford-street, for damages for alleged negligence on their part in constructing a temporary supper-room at the plaintiff's house, in consequence of which the supper-room was destroyed by fire, causing damage to the plaintiff. The defence was a denial of liability. Defendants counter-claimed for work and labour done.

Sir Edward Clarke, K.C., Mr. Bankes, K.C., and Mr. J. C. Graham appeared for the plaintiff, and Mr. H. F. Dickens, K.C., and Mr. G. Wallace for the defendants.

Sir Edward Clarke, in opening the case, said that in June, 1903, the plaintiff proposed to give a party at his house in Grosvenor-square, and having, in 1899, employed the defendants to erect a temporary supper-room, when everything was most satisfactorily done by the defendants, he employed them again. Instructions were given to the defendants that the arrangements were to be the same as on the earlier occasion, with one exception. The room was to be erected on the leads at the back of the house. The actual construction of the room was handed over by the defendants to Messrs. Simmonds & Sons. About a week before July 17, the erection of the structure was begun, it consisting of uprights and cornices of wood upon which canvas coverings were stretched. Inside there was another covering of canvas which was hung with muslins, and the room was lighted by electric light. On July 17 the structure was finished, and on that evening the muslin in the supper-room took fire, and in ten minutes the whole structure was in a blaze. The flames rushed into the house, and a great deal of damage was done. Afterwards an inquiry was held into the cause of the fire. For that purpose an inspection was made of the premises, and the result of that inspection was that the installation put in by the defendants was, having regard to the inflammable nature of the hangings of the supper-room, was stated to be very unsafe, and that proper precautions had not been taken to render it as safe as might be by the use of a proper number of fuses. In addition, no precautions had been taken to render the hangings of the room non-inflammable, a course which was almost invariably adopted in the case of structures of this kind. The learned counsel said that the fire had injured some very valuable furniture, and the plaintiff had been put to great expense. The jury, however, would not be troubled with any question of the amount of damage done, as it had been arranged between the parties that, if necessary, the damages should be subsequently assessed. The question for the jury would be whether the defendants had not failed to provide a properly-constructed and safe structure. If that was the case, they would be responsible for the damage sustained by the plaintiff.

Expert evidence was called on behalf of the plaintiff to the effect that the temporary electric light installation put in by the defendants for illuminating the supper-room was of such a nature as to involve risk of accident, and that it was not a proper system to use in a building where there was a quantity of inflammable material such as muslin.

Mr. Dickens, in opening the defendants' case, said that the installation put in by the defendants was not defective, but was a perfectly proper one for the purpose. He said that the defendants would be able to show that the fire could not have been caused by the electric wires because at the time when it broke out there were no lights at the place where it originated. At that time all the lights, with the exception of the pilot light in the middle of the room, had been switched off. It was possible that the fire was originated by a spark from a chimney outside, which, being fanned by one of the ventilators, set the muslin on fire. He submitted that all reasonable precautions had been taken by the defendants, and that there had been no negligence on their part.

Evidence was called on behalf of the defendants to the effect that the installation put in by them was not defective, but was a perfectly proper one for the purpose for which it was required, and that defendants had not been guilty of any negligence.

In the result the jury returned a verdict for the defendants, both on the claim and counter-claim, and judgment was entered accordingly.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

1,070 of 1904.—J. E. FAIRWEATHER and J. RIDLEY: *Sash Balances.*

This relates to sash balances in which a spring-operated toothed wheel adapted to be mounted on a frame gears with a toothed rack adapted to be mounted on a sash guided by the frame, consisting in the combination of a casing, a gear wheel, a detent, a detent release, and a sash shifter.

1,268 of 1904.—W. B. BASSET and E. BARRY: *Machine for Forging Bolts, Nuts, or Spikes from Bars.*

This consists in the combination with an intermittently rotatable carrier having an annular series of bed or holding dies adapted to successively receive the end portion of a bar from which predetermined lengths are to be cut to form bolts, screws, spikes, or the like, and that a working die or dies carried by a ram and adapted to co-act with said bed or holding dies, so as to form by end pressure on each successive length of bar a head or other portion of a shape differing from that of the bar itself, of stationary and movable shear blades capable of severing said predetermined lengths from the bar, the movable shear blade being so geared that the carrier has to be caused by each intermittent rotary movement of the latter to perform the cutting operation, and to thereafter return to operative position or bring thereinto a fresh shear blade.

1,269 of 1904.—W. B. BASSET and E. BARRY: *Apparatus for Use in the Manufacture of Screwed Bolts.*

An apparatus for presenting a succession of bolts or screws to screwing tools, consisting of an endless chain or conveyor adapted to retain the bolts or screws in position on the chain, ratchet gear, and a continuously rotated cam shaft adapted to intermittently actuate said ratchet gear in time with the operation of the screwing tools, and means for immovably holding the bolts or screws whilst being operated on.

1,270 of 1904.—W. B. BASSET and E. BARRY: *Machine for Automatically Tapping Nuts.*

An apparatus for automatically and continuously tapping nuts, consisting in the combination with a vertical tap, means for producing

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made

angular movement of the tap and nut fed thereon relatively to one another about their common axis, means for causing the nut to initially take on to the threads of the tap, holding device for the tap adapted to independently support the tap in position and capable of being discharged therefrom, and mechanism operatively connected with said holding device and adapted to cause said device to be in turn disengaged from the tap so as to permit of the nut when threaded passing clear of the tap.

3,175 of 1904.—A. J. NORRIS: *Handle Specially Applicable to Furniture, and the like.*

A handle for articles of furniture, or the like, consisting of a back plate having a hole or holes therein, a loose boss or bracket or bosses or brackets, each having a front part projecting through one of said holes from the rear of the back plate, and a lateral extension or base adapted to lie between the back plate and the article of furniture, a handle proper mounted on the projecting front part or parts of the bosses or brackets, and means for fixing the back plate with the article of furniture.

3,415 of 1904.—H. WARRINGTON and H. J. WARRINGTON: *Working of Ovens for Use in Baking Bricks, and the like.*

A method of working ovens for use in baking bricks, tiles, and the like, same consisting in arranging two or more ovens in communication with one another and with a chimney common to both or to all and causing the waste gasses which escape from one oven to pass to the next in order, thereby utilising the said gasses in the preliminary heating of the latter oven.

4,922 of 1904.—S. SNOWDON and E. E. LAWRENCE: *Outdoor and like Seats.*

This relates to seats, consisting in the combination with the arms of the reversible backs of hinged seat covers pivoted on rods secured to said backs, stationary shafts secured in the longitudinal arms, tubes surrounding the shafts, springs engaging with the shafts and with the tube, hinges, or movable seat surfaces, and means for adjusting the covers between the longitudinal arms.

5,187 of 1904.—G. E. SPARKES: *Construction of Joints for Rods and other like Articles.*

This consists of pieces of metal or other suitable material forming male and female connexion. The male end is shaped either wedge, tee, triangular, or other angular shape, and the female end is provided with a suitably-shaped aperture or cavity for receiving same, so shaped to make a tight or loose joint. When the joint is required as a partially permanent joint a pin is passed through the male and female parts. Also on the outside of the male or female socket a screw-threaded projection is provided which is fitted with a screwed nut or collar. The two sockets are fitted one in the other, and the nut or collar revolved so that the same passes over the formed joint, the two thereby remaining locked until the nut or collar is reversed, a chamber for receiving a rod or other like articles is made larger at the bottom. A wedge is also provided fixed in the bottom of same which prevents the rod from turning.

6,035 of 1904.—F. TYERS: *Clips for Attaching Pipes, Electric Cables, or the like, to Walls or other Fixtures.*

This invention relates to clips for fastening pipes, electric cables, or the like, to walls or other fixtures, and its object is to provide a clip that will not cut into a soft metal pipe or into the insulation of an electric cable. According to this invention the main part of the clip is provided with a rim on its inner edge preferably standing at right angles to the main part. This rim may extend all the way round and serve to retain a lining, which is placed on the inner side of the clip prior to placing it in position on the pipe or cable.

6,074 of 1904.—S. SAUNDERS: *A Pipe Joint.*

Means for obtaining a fluid-tight joint between copper and similar tubing and branches and other fittings, consisting of an angular flexible rim formed on the end of the tube bedding upon the face of the branch, and means for compressing the angular flexible rim against the face.

6,133 of 1904.—W. KANE: *Heating Apparatus.*

It is the object of this invention to provide a simple unitary independent heating apparatus, constituting in itself a complete heating system adapted for use with gaseous fuel. The radiator consists of a series of massed vertical pipes communicating at the top with an air chamber open to the atmosphere and extending over the open ends of the pipes, and at the bottom with a water chamber extending below the open lower ends of the pipes. In the preferred construction the ends of the tubes are expanded in a top and base plate. To the top plate is secured a slightly dome-shaped crown cap forming the upper air space, and to the base plate is secured a recessed base cap forming the lower water space.

16,437 of 1904.—H. E. KENNY: *Weather Strips for Windows.*

A metal weather strip, consisting of a sealing flange formed of a strip bent upon itself, and having at one edge a series of securing flanges extending at an angle thereto, part of the series being bent under the sealing flange.

5,851 of 1904.—J. TIPPER: *Manufacture of Bolts for Doors and Gates.*

A double-handed door or gate bolt having a pair of staples, which are independent of the staples which carry the bolt pin, projecting from the bolt plate in positions which adapt them, respectively, to allow a hasp which is carried by the pin to be engaged therewith when the bolt is in one or other of what are its extreme positions when in use.

5,997 of 1904.—W. E. HOPKINS: *Coin-freed Locks or Fastenings for Doors.*

This invention consists in coin-freed locks or fastenings for doors of apartments, and has for its object to provide a means whereby an entrance can be made to the apartments when the same is occupied. In carrying this invention into effect the one side of the recess in the door frame, into which the supplementary bolt is shot when closed, is made parallel with the said bolt, but of the opposite side an inclined plane of just sufficient angle is made, so that when the bolt is shot from the inside, and the occupant is unable to withdraw same, an attendant in possession of a special and additional key may actuate the main bolt, and by then pulling or pushing, as the case may be, the said door, the end of the supplementary bolt will thus come into contact with the inclined plane in the recess of the aforesaid door frame, and so force the supplementary bolt back into the body of the lock and release the door.

4,659 of 1904.—B. C. SIMPSON: *Machinery for the Manufacture of Slabs or Blocks of Plaster, Concrete, or other Material.*

This relates to an apparatus for the manufacture of slabs or blocks of plaster, concrete, or other suitable material, wherein the mould box may have any number of cells or chambers, separated from one another by dividing partitions, which partitions, and also the ends of the mould box, which form the outer surfaces of the end slabs or blocks, are fixed, excepting that the partitions may, if required, be capable of a slight lateral motion to facilitate the expulsion of the slabs or blocks, and the said slabs or blocks are expelled from the mould by means of plungers, which form one end of the cells or chambers of the mould box, and are operated on by machinery so as to travel through the said cells or chambers and expel the slabs or blocks out of the opposite side of the mould box, which is opened to allow of the exit of the said slabs or blocks.

18,287 of 1904.—J. H. HARRIS: *Roof Glazing.*

This relates to roof glazing, consisting in forming a framing and attaching to said framing a lead bar having grooves in which suitable cords are placed to form a bedding for the glass, condensation channels, and wings which are bent down to form a capping.

24,371 of 1904.—E. COIGNET: *Reinforced or Armoured Concrete Construction.*

This invention relates to reinforced or armoured concrete construction. The general principle governing this kind of construction is to employ the iron reinforcement to resist the tensile stresses and the beton or concrete to resist the compression stresses, and in bodies required to resist flexion it is desirable to leave as much space as possible between the bars which take the tensile stress and the concrete which takes the compression. This rule, however, need not be strictly adhered to in practice, and, according to the present invention, compression bars as such are also employed to lessen the dead weight, to permit of suitable connexion between the tensile and compression parts by metal dies, and to enable beams to be prepared in advance, which, after being placed in position, support the centring which bears or supports the fresh concrete as it is laid down, thus assisting in the general resistance of the work.

24,922 of 1904.—K. AMENDT: *Ashphalted Parquet Floor Slabs.*

An improvement in the parquet floor plate described in the British Specification No. 24,529, 1902, which consists in covering the wood with a tissue—for instance, a tissue of jute-yarn—upon which the asphalte is poured, for the purpose of increasing its power of resistance, and for preventing its peeling off from the wood.

26,545 of 1904.—E. STENZEL: *Moulded Stone for Window Sills.*

The article of manufacture forming the subject of this invention is a moulded stone profiled for the production of window sills; this is provided with a ledge to receive the window frame, and with a downwardly inclined face, and consisting preferably of clay free from lime of 5cm. thickness. Such profile stones being laid on an upright course, a window sill is produced without it being necessary, as heretofore, to hew each stone in order to produce the profile given by the new stone. It is known that with such an arrangement with the ordinary masonry stones much time and material are lost, stones being wasted and difficulty being experienced in disposing the stones uniformly, while it became absolutely necessary to plaster the sills built up in this way, or else to dispense with the sloping face, and so lose the conditions of shedding off rain, etc.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

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Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 26.—By LOCKE & SON (at Birmingham).	
Claverdon, Warwick.—Ardencote Estate, 81 acres, f.	£8,000
January 30.—By J. BOTT & SONS.	
Herne Hill.—41, Gubyon-av., u.t. 70 yrs., g.r. 7*l.* 15s., y.r. 50*l.*	550
By NORMAN & SON (at Stratford).	
Stratford.—9, Water-la., f., e.r. 70*l.*	920
9 and 11, Earl-st., f., w.r. 48*l.* 2s.	400
46 Martin-st., f., w.r. 31*l.* 4s.	405
Plaistow.—3, 5, and 7, Stratford-rd., f., w.r. 62*l.* 8s.	550
Forest Gate.—471, Katherine-rd. (s.), f., e.r. 35*l.*	460
Silvertown.—42, Cranbrook-rd., and 1, Evelyn-rd., f., w.r. 52*l.*	430
January 31.—By LINNETT & LANE.	
Maida Vale.—35, Warwick-rd., u.t. 46 yrs., g.r. 24*l.*, e r. 110*l.*	395
Harlesden.—88 and 92, St. John's-av. (s.), u.t. 99 yrs., g.r. 16*l.* 10s., y.r. 90*l.*	800
By A. ROBERTSON.	
Hackney.—2, Wick-rd. (s.), u.t. 38 yrs., g.r. 3*l.*, y.r. 24*l.*	165
By FREDERICK WARMAN.	
Highbury.—123, Highbury New-pk., u.t. 45 yrs., g.r. 10*l.* 10s., p.	820
Finsbury Park.—32, Finsbury Pk.-rd., u.t. 61 yrs., g.r. 9*l.* 9s., y.r. 50*l.*	465
Muswell Hill.—Sydney-rd., a freehold building plot	100
By WESTMORE & YOUNG.	
Sydenham.—3, Hillcrest-rd., u.t. 58½ yrs., g.r. 12*l.* 10s., e.r. 80*l.*	600
February 1.—By MARK LIELL & SON.	
Mile End.—51, Burdett-rd. (s.), u.t. 45 yrs., g.r. 5*l.* 10s., e.r. 60*l.*	670
Stratford.—47, Chandos-rd., f., w.r. 26*l.*	245
By EDWARDS, SON, & BIGWOOD (at Birmingham).	
Bromsgrove, etc., Worcester. — "Durrance Farm," 123 a. 0 r. 33 p., f, p.	3,100
Smethwick, Staffs.—115 and 116, Rolfe-st. (s.), f., y.r. 32*l.* 10s.	330
February 2.—By J. & W. JOHNSON & Co.	
Bethnal Green.—Braemar-st., "The Hope" b.h., with house adjoining, f., y.r. 64*l.* 10s.	1,100
By G. W. & H. G. POTTER.	
Hampstead.—30, Fitzjohn's-av., f., p.	7,000
By STIMSON & SONS.	
Brixton.—64, 66, and 68, Bishop's-rd., u.t. 56½ yrs., g.r. 12*l.* 15s., w.r. 106*l.* 12s.	810
5, 7, and 9, Farrar-st., u.t. 15 yrs., g.r. 9*l.*, w.r. 88*l.* 6s.	380
1, Frederick-cres., u.t. 56¼ yrs., g.r. 1*l.* 10s., w.r. 39*l.*	285
10, Myatt-rd., u.t. 52½ yrs., g.r. 4*l.*, w.r. 39*l.*	260
3, 11, and 12, Listowel-st., u.t. 56¼ yrs., g.r. 12*l.* 10s., w.r. 106*l.* 12s.	755
22, Belinda-rd., u.t. 63 yrs., g.r. 5*l.*, w.r. 33*l.* 16s.	210
15, Kepler-rd., u.t. 62½ yrs., g.r. 6*l.* 10s., w.r. 34*l.* 10s.	335

Stockwell.—18, 20, 22, 24, and 28, Burgoyne-rd., u.t. 62 yrs., g.r. 25*l.*, w.r. 159*l.* 18s... £1,340
37, Burgoyne-rd., u.t. 59½ yrs., g.r. 7*l.* 7s., w.r. 31*l.* 4s. 310
21, Combermere-rd., u.t. 60½ yrs., g.r. 4*l.*, y.r. 30*l.* 310
35, 56, and 58, Dalyell-rd., u.t. 59½ yrs., g.r. 16*l.* 17s. 6d., w.r. 102*l.* 16s. 865
26, Landor-rd., u.t. 46¾ yrs., g.r. 3*l.* 10s., w.r. 33*l.* 16s. 275
76, Mordaunt-st., u.t. 60½ yrs., g.r. 5*l.*, w.r. 41*l.* 12s. 330
1 and 3, Moat-pl., u.t. 38½ yrs., g.r. 10*l.*, w.r. 66*l.* 6s. 465
2, Moat-pl., u.t. 50¾ yrs., g.r. 4*l.*, w.r. 33*l.* 16s. 245
3 to 10, 13 to 23, Nealdon-st., u.t. 51¾ yrs., g.r. 67*l.* 10s., w.r. 796*l.* 18s. 5,985
10 and 11, Stockwell-green, u.t. 60 yrs., g.r. 10*l.* 10s., w.r. 109*l.* 4s. 690
12, Stockwell-green and 21, Stockwell-gr., u.t. 60 yrs., g.r. 8*l.* 8s., w.r. 88*l.* 8s. 580
86, Stockwell-rd. (s.), u.t. 19½ yrs., g.r. 5*l.* 9s., y.r. 32*l.* 200
95, Stockwell-rd. (s.), f., y.r. 38*l.* 500
48 to 56 (even), Lingham-st. (s.), f., w.r. 169*l.* 1,540
60, 62, and 64, Lingham-st., f., w.r. 70*l.* 4s. 860
Camberwell.—30, Clarendon-st. (s.), u.t. 20¾ yrs., g.r. 4*l.*, y.r. 32*l* 210
1, 2, 3, 7, and 8, Clarendon-pl., u.t. 21½ yrs., g.r. 15*l.*, w.r. 169*l.* 730
14 and 15, Ulric-st., u.t. 20 yrs., g.r. 5*l.* 5s., y.r. 40*l.* 300
36 and 37, Warrior-rd., u.t. 58½ yrs., g.r. 8*l.* 8s., w.r. 65*l.* 470
18, Horsman-st., f., w.r. 31*l.* 4s. 330

February 3.—By HIND & SON.

Leytonstone.—164, Hainault-rd., f., p. 500

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

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MEETINGS.

FRIDAY, FEBRUARY 10.

Architectural Association.—Mr. C. S. Spooner on "Church Fittings." 7.30 p.m.
Royal Institution.—9 p.m.
Sanitary Institute.—Conference on School Hygiene: Training in Hygiene. 11 a.m.
Institution of Civil Engineers (Students' Meeting).—Paper to be read, "The Reconstruction of the Santa Lucia River Bridge, Uruguay," by Mr. P. J. Risdon. 8 p.m.

SATURDAY, FEBRUARY 11.

Junior Institution of Civil Engineers.—The "Coming of Age" Dinner of the Institution will be held at the Hotel Cecil at 6.30 for 7 p.m., the President, Mr. W. H. Lindley, M.Inst.C.E., F.G.S., in the chair.
Incorporated Clerks of Works' Association.—Twenty-second Annual Dinner, Criterion Restaurant. 6.15 p.m.

MONDAY, FEBRUARY 13.

Surveyors' Institution.—Resumed Discussion on Papers by Messrs. A. R. Stenning and R. Menzies on "Urban and Rural By-laws." 8 p.m.
Institution of Mechanical Engineers (Graduates' Meeting).—Dr. J. T. Nicolson, of the Municipal School of Technology, Manchester, on "Results of Force Measurements with Cutting Tools, and their Application to Lathe Design." 8 p.m.
Junior Institution of Engineers.—Visit to the Brockie-Pell Arc Lamp Works, 60, Worship-street, E.C. 6.30 p.m.
Society of Arts (Cantor Lecture).—Mr. Dugald Clerk on "Internal Combustion Engines," I. 8 p.m.
Bristol Society of Architects.—Mr. J. A. Gotch on "The Homes of Queen Elizabeth's Courtiers," with limelight illustrations. 8 p.m.

TUESDAY, FEBRUARY 14.

Institute of Sanitary Engineers, Ltd. (Lectures in Practical Sanitary Science).—Dr. J. Priestley, B.A., on "Sanitary Law." 7 p.m.
Cardiff, South Wales, and Monmouthshire Architects' Society.—Paper by Mr. E. M. Bruce Vaughan: "A Trip to Belgium." 8 p.m.
Northern Architectural Association.—Mr. Ralph Hedley on "Architectural Details in Charcoal." 7.30 p.m.
Institution of Civil Engineers.—(1) Mr. E. F. C. Trench, M.A., on "Alfreton Second Tunnel." (2) Mr. Dugald McLellan on "The Reconstruction of Moncreiffe Tunnel." 8 p.m.

WEDNESDAY, FEBRUARY 15.

Architectural Association (Discussion Section).—Mr. J. B. Fulton on "The Axial Line in Planning." 7.30 p.m.
Institute of Sanitary Engineers, Ltd.—Election Committee; Examination and Literary Committee; Finance Committee; Organising Committee. 3 p.m. Sessional Meeting at 7 o'clock p.m.: Paper by Mr. J. Thompson on "The Sanitation of Southend-on-Sea."
Society of Arts.—Mr. A. H. Anderson on "The Decline of the Country Town." 8 p.m.
Edinburgh Architectural Association.—Paper by Rev. Professor Cooper Glasgow. 8 p.m.
Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting of the Members. 8 p.m.
Institution of Civil Engineers.—Students' Visit to the Electricity Generating Station of the Underground Electric Railways Company of London, Ltd., Lot's-road, Chelsea. 2.30 p.m.

THURSDAY, FEBRUARY 16.

Carpenters' Hall Lectures.—Sir W. H. White, K.C.B., on "Modern Warships." 8 p.m.
Society of Antiquaries.—8.30 p.m.
Royal Institution.—Mr. J. J. H Teall, M.A., on "Recent Work of the Geological Survey," I. 5 p.m.

FRIDAY, FEBRUARY 17.

Institution of Mechanical Engineers.—Fifty-eighth Annual General Meeting, when the Annual Report of the Council will be presented to the Meeting, the results of the Ballot for the Annual Election of the President, Vice-Presidents, and Members of Council will be announced, and the adjourned Discussion on the American Visit, 1904, will be resumed. The Paper to be read and discussed is entitled "The Strength of Columns," by Professor W. E. Lilly. 8 p.m.
Northern Architectural Association (Students' Sketching Club).—Annual Social Gathering and Exhibition of Sketches and Measured Drawings in the Hall of the Church Institute, Hood-street. 7.30 p.m. to 10.30 p.m.

SATURDAY, FEBRUARY 18.

Edinburgh Architectural Association.—Dinner of the Association. 7 p.m.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 12 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 8 0	" " "
Facing Stocks ...	2 5 0	" " "
Shippers	2 5 0	" " "
Flettons	1 8 0	" at railway depôt.
Red Wire Cuts ...	1 14 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire ...	4 4 0	" " "
Do. Bullnose	4 10 0	" " "
Best Stourbridge Fire Bricks.....	4 8 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	12 0 0	" " "
Headers	11 0 0	" " "
Quoins, Bullnose, and Flats.....	16 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers...	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamferred, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	" " "
Quoins, Bullnose, and Flats.....	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers...	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamferred, Squints	14 0 0	" " "
Second Quality White and Dipped Sal Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand.....	7 0	per yard, delivered.
Thames Ballast.....	5 9	" "
Best Portland Cement	27 0	per ton, "
Best Ground Blue Lias Lime	20 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	" "
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2 1	" "
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2 2½	" "

	s. d.	
Ancaster in blocks	1 1½	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks...	2 4	" "
Red Corsehill "	2 5	" "
CloseburnRedFreestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

Scappled random blocks	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super. "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "

STONE (*continued*).

HARD YORK—	s. d.	
Scappled random blocks	3 0	per ft. cube, deld. rly. depôt.
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides (slabs random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "

	s. d.	
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube, deld. rly. depôt.
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
" " " 3 in. do.	1 2½	" "

SLATES.

in. in.	£ s. d.	
20 × 10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20 × 12 " "	13 17 6	" "
20 × 10 first quality "	13 0 0	" "
20 × 12 " " "	13 15 0	" "
16 × 8 " " "	7 5 0	" "
20 × 10 best blue Portmadoc	12 12 6	" "
16 × 8 " "	6 12 6	" "
20 × 10 best Eureka unfading green .	15 17 6	" "
20 × 12 " "	18 7 6	" "
18 × 10 " "	13 5 0	" "
16 × 8 " "	10 5 0	" "
20 × 10 permanent green	11 12 6	" "
18 × 10 " "	9 12 6	" "
16 × 8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles .	42 0	per 1000 at rly. depôt.
Hip and Valley tiles ...	3 7	per doz. " "
Best Broseley tiles.....	50 0	per 1000 " "
Do. Ornamental tiles	52 6	" " "
Hip and Valley tiles ...	4 0	per doz. " "
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 " "
Do. Ornamental do	60 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 0	" " "
Best Red or Mottled Staffordshire do. (Peakes).....	51 9	per 1000 " "
Do. Ornamental do.....	54 6	" " "
Hip tiles	4 1	per doz. " "
Valley tiles	3 8	" " "
Best "Rosemary" brand plain tiles.....	48 0	per 1000 " "
Best Ornamental tiles	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 8	" " "
Best "Hartshill" brand plain tiles, sand faced.	50 0	per 1000 " "
Do. pressed.....	47 6	" " "
Do. Ornamental do	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 6	" " "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	13 10 0	15 0 0
Deals: best 3 by 9.....	13 0 0	14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	12 0 0
Battens: best 2½ by 6 and 3 by 6 ..	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less thn best
Battens: seconds	0 10 0	" " "
2 in. by 4 in. and 2 in. by 6 in....	9 0 0	10 0 0
2 in. by 4½ in. and 2 in. by 5 in....	8 10 0	9 10 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"
	At per load of 50 ft.	
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	5 0 0
Seconds	4 0 0	4 10 0
Small timber (8 in. to 10 in.) ...	3 12 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 10 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in	24 0 0	25 0 0
3 in. by 9 in.	22 0 0	23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0
Second yellow deals, 3 in by 11 in.....	18 10 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	12 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.....	18 0 0	19 10 0
Battens.....	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.....	14 10 0	16 0 0
Battens.....	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	14 0 0
Do. 3 in. by 9 in.....	12 10 0	14 0 0
Battens.....	10 0 0	11 0 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	10 0 0	11 0 0
Pitch-pine: deals.....	16 10 0	20 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	40 0 0	upwards.
Oddments	28 0 0	"
Seconds, regular sizes.....	30 0 0	"
Yellow Pine oddments	25 0 0	"
Kauri Pine—Planks, per ft. cube .	0 3 6	0 5 0
Danzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	0 3 6
Small " "	0 2 6	0 2 9
Wainscot Oak Logs, per ft. cube.	0 5 0	0 5 6

WOOD (*continued*).

JOINERS' WOOD (*continued*).	At per standard. £ s. d.	£ s. d.
Dry Wainscot Oak, per ft. sup. as inch	0 0 8	0 0 9
¾ in. do. do.	0 0 7	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	0 1 0
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 6
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	21 0 0
American Whitewood Planks, per ft. cube	0 4 0	0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
1 in. by 7 in. do. do.	0 14 0	0 18 0
¾ in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do.	0 12 9	0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	5 15 0 ...	6 15 0
Compound Girders, ordinary sections	7 5 0 ...	8 7 6
Steel Compound Stancheons	9 2 6 ...	10 12 6
Angles, Tees and Channels, ordinary sections	7 7 6 ...	8 7 6
Flitch Plates	7 15 0 ...	8 5 0
Cast Iron Columns and Stanchions including ordinary patterns	6 12 6 ...	7 15 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	7 0 0 ...	7 10 0
Staffordshire Crown Bars, good merchant quality		8 0 0
Staffordshire "Marked Bars"	9 10 0 ...	—
Mild Steel Bars	8 5 0 ...	8 15 0
Hoop Iron, basis price	8 15 0 ...	9 0 0
" " Galvanized	16 10 0 ...	—
(*And upwards, according to size and gauge.)		
Sheet Iron, Black—		
Ordinary sizes to 20 g.	9 0 0 ...	—
" " 24 g.	10 0 0 ...	—
" " 26 g.	11 15 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12 10 0 ...	—
Ordinary sizes to 22 g. and 24 g.	13 0 0 ...	—
" " 26 g.	14 0 0 ...	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	15 10 0 ...	—
" " 22 g. and 24 g.	16 0 0 ...	—
" " 26 g.	17 10 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes 6 ft. to 8 ft. 20 g.	12 10 0 ...	—
" " 22 g. and 24 g.	13 0 0 ...	—
" " 26 g.	13 15 0 ...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 0 0 ...	—
Best Soft Steel Sheets, 22 g. & 24 g.	12 0 0 ...	—
" " " 26 g.	13 10 0 ...	—
Cut nails, 3 in. to 6 in.	9 0 0 ...	9 10 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up	15 7 6 ...	—
Pipe in coils	15 17 6 ...	—
Soil pipe	18 7 6 ...	—
Compo pipe	18 7 6 ...	—
ZINC—Sheet—		
Vieille Montagne ton	30 15 0 ...	—
Silesian	30 10 0 ...	—
COPPER—		
Strong Sheet per lb.	0 0 10 ...	—
Thin "	0 0 11 ...	—
Copper nails "	0 0 10 ...	—
BRASS—		
Strong Sheet "	0 0 9½ ...	—
Thin "	0 0 10 ...	—
TIN—English Ingots "	0 1 4½ ...	—
SOLDER—Plumbers' "	0 0 6½ ...	—
Tinmen's "	0 0 8 ...	—
Blowpipe "	0 0 9 ...	—

ENGLISH SHEET GLASS IN CRATES.

	2½d. per ft. delivered.
15 oz. thirds	
" fourths	2d. " "
21 oz. thirds	3⅜d. " "
" fourths	3d. " "
26 oz. thirds	4⅜d. " "
" fourths	3¾d. " "
32 oz. thirds	5⅜d. " "
" fourths	5d. " "
Fluted Sheet, 15 oz.	3¾d. " "
" 21 oz.	4⅛d. " "
⅜ Hartley's Rolled Plate	2d. " "
½ " " "	2½d. " "
⅝ " " "	2½d. " "

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 4
" " " in barrels	"	0 1 5
" " " in drums	"	0 1 7
Boiled " " in pipes	"	0 1 6
" " " in barrels	"	0 1 7
" " " in drums	"	0 1 9
Turpentine, in barrels	"	0 3 4
" in drums	"	0 3 6
Genuine Ground English White Lead	per ton	19 15 0
Red Lead, Dry	"	19 5 0
Best Linseed Oil Putty	per cwt.	0 6 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted*

BANBURY.—For the supply of Hartshill stone for one year, for the Town Council. Mr. N. H. Dawson, Borough Surveyor, Town Hall, Banbury :—

		Per ton. s. d.
Tees Hartshill Granite and Brick Co., Ltd., Hartshill, near Atherstone*	Hand picked stones	7 9
	Coarse chippings	7 3
	Fine chippings	7 3
	Granite dust	7 3

Delivered on to Corporation Wharf, Banbury.

BARBON (Westmorland).—For widening Waterylane, for the South Westmorland Rural District Council. Mr. G. B. Atkinson, Surveyor, Jasmine Cottage, Milnthorpe. Quantities by Surveyor :—
W. Carradice, Low Fellside, Kendal £117

BECKENHAM.—For making-up Queen's-road and Cedars-road and Clockhouse-road (paving), for the Urban District Council. Mr. J. A. Angell, Surveyor, Beckenham :—

	Queen's-road.	Cedars-road.	Clockhouse-road.
Fry Bros.	£1,072	£1,386	£276
W. Pearce	1,010	1,324	180‡
Free & Sons	984	1,290	233
Mowlem & Co.	966	1,275	202
E Iles, jun.	974	1,244	193
Woodhams & Son, Langley-road, Catford	929‡	1,191‡	209

[‡ Recommended for acceptance.]

BRENTWOOD.—For the rebuilding of the "Queen Inn," Brentwood, Essex. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C. :—

Dowsing & Davis	£1,010	0	
Clemens Bros.	1,005	10	
T. Osborn & Sons	£925	0	
F. W. Burtwell*	903	0	

BUNCRANA (Ireland).—For erecting a villa residence at Victoria Park. Mr. R. H. Simmons, architect and surveyor, Carlisle-chambers, Duke-street, Londonderry :—
J. R. Donaghy, Waterside, Londonderry* .. £575

BUSHTON (Wilts.).—For rebuilding a portion of the Malt House B.H., for Messrs. Horsell & Marson. Messrs. William Drew & Sons, architects, Regent-circus, Swindon :—
H. Flewelling, Wootton Bassett* £220
[Five tenders received.]

COLCHESTER.—For making-up Winlap-road. Mr. Ernest S. Beard, surveyor, Head Gate, Colchester :—

Manders	£1,701	0	0	Dobson & Son	£1,344	0	0
Scales & Robins	1,548	14	0	Everett & Son	1,276	0	0
Jackson	1,445	13	9	Z. Fairclough	1,260	0	0
Oak Building Co., Ltd.	1,445	4	6	Porter & Co.	1,178	0	0
G. Rackham	1,389	0	0	T. Trueman	1,099	0	0
Wilson, Border, & Co.	1,350	3	0	Howard & Son, Colchester*	1,060	0	0

CORK.—For erecting forty-six houses for the working classes on part of Roche's Buildings site, for the Town Council. Mr. J. F. Delany, City Engineer. Quantities by City Engineer :—
J. Delany & Co., Henry-street, Cork £5,391

DARTFORD. — For making-up Hillhouse-road, Invicta-road, and Milestone-road, Stone, for the Rural District Council. Mr. W. Harston, engineer, 8, Hythe-street, Dartford. Quantities by engineer :—

S. J. Brice & Sons	£2,203	Road Maintenance and Stone Supply Co., Ltd., Gravesend, Kent*	£1,303
T. Adams	1,731		
W. H. Wheeler	1,617		
W. Dierden	1,353		

DAVENTRY.—For building two cottages at Daventry, for the Daventry Co-operative Society, Ltd. Mr. J. B. Williams, architect, Moot Hall, Daventry :—
Holland & Marks £581
J. Bosworth, Daventry* 498

DERI.—For erecting thirty-two houses for the Deri No. 2 Building Club. Mr. P. Vivian Jones, architect and surveyor, Hengoed :—

R. Tudor	£8,832	10	D. W. Davies, Morgan-chams., St. Mary-street, Cardiff*	£7,200	0
R. Lloyd	8,240	0			
E. P. Davies	7,648	0			
Morris & Co.	7,616	0	Ruddiford Bros.	7,068	0
D. Williams	7,552	0	M. Gibbon	7,050	0
Jewell & Davies	7,452	8	Vodden & Lee	6,912	0
W. Bowen & Co.	7,200	0	J. Lloyd	6,800	0

ERDINGTON.—For council house and free library. Mr. John P. Osborne, architect, Birmingham :—
Barnsley & Sons* £13,888

HALIFAX.—For completing a street at Skircoat. Mr. Lister Coates, architect and surveyor, Midland Bank-chambers, Waterhouse-street, Halifax :—

J. W. Staves	£217	5	8	W. H. Longbottom	£131	13	0
A. Hanson	186	10	6	Spencer Bros.	98	12	1
Allott & Spencer	186	1	0	S. Bedford & Son, Huddersfield-rd., Halifax*	93	7	1
G. Bullough	159	8	8				
J. Brook	139	0	2				
Jos. Brook	138	0	10				

HARTSHILL.—For two silt filters and works of under-drainage at sewage disposal works, for the Nuneaton and Chilvers Coton Urban District Council. Mr. F. C. Cook, Engineer, Council Offices, Nuneaton :—

Johnson Bros.	£2,123	6	5	Langley, Hardy, & Johnson.	£1,561	18	8
H. Ashby	1,908	2	4	G. Holloway, Wolverhampton*	1,300	0	0
W. Cunliffe	1,916	7	0				
T. Smith	1,9 9	4	4				
A. Jewell	1,734	0	0				
J. Owens	1,588	5	4				

Construction of Storm-water Overflow in Bond Gate.

T. Smith	£273	4	7
J. Brown, Nuneaton*	244	6	2

LANCHESTER.—For sewerage and sewage disposal works near Craghead, for the Rural District Council. Mr. J. R. Lupton, Surveyor, Lanchester :—

J. Lant	£1,959	0	0	J. Frater	£1,084	12	3
W. G. Armstrong	1,475	0	0	A. Routledge	1,075	0	0
D. Champney	1,319	0	0	Ayton & Sons	1,069	10	0
G. T. Manners	1,248	0	0	W. Johnson, Stanley, R.S.O.*	1,060	0	0
R. C. Birtley	1,161	17	11	McLaren & Son	1,050	0	0
J. Browell	1,159	0	0				
S. Walker	1,150	0	0				
E. Taylor	1,148	0	0				

[Surveyor's estimate, £1,093.]

LLANDAFF.—For sewerage and sewage disposal works, for Llandaff and Dinas Powis Rural District Council. Mr. Baldwin Latham, engineer, Parliament-mansions, Victoria-street, Westminster, S.W. Mr. J. Holden, Engineer to the Council, 20, Park-place, Cardiff :—

Mackay & Davies	£9,591	9	5	T. Rees	£7,909	0	8
F. Ashley	9,109	10	1	J. E. Evans	7,905	8	4
J. Allen & Sons	8,928	19	1	E. Powell	7,598	12	0
S. L. Harrison & Co.	8,596	0	0	Public Works Co.	7,303	16	2
Barnes, Chaplin, & Co.	8,044	14	2	G. Rutter, Barry*	6,764	19	10

LONDON.—For new boiler house, for the Chelsea Guardians :—

Vigor & Co.	£876	Faulkner	£697
Harding & Son	815	Mollett	6?4
Feetham	807	Wade, Chelsea*	689
Cruse & Co.	759	Pearce	669
Brown	720		

LONDON.—For constructing underground conveniences in Great Dover-street, for the Southwark Borough Council. Mr. A. Harrison, Borough Engineer, Town Hall, Walworth-road, S E. :—

Shelbourne & Co.	£3,532	R. & E. Evans	£2,595
B. Finch & Co., Ltd.	3,327	Foster Bros.	2,516
G. Jennings, Ltd.	3,080	Chambers Bros.	2,434
Doulton & Co., Ltd.	2,790	Wisdom Bros., Isleworth*	2,375
J. Parsons	2,764		
Thomas & Edge	2,683		

LONDON.—For providing and fixing low-pressure hot-water apparatus to fourteen classrooms, two halls, two cloakrooms, and corridors, at Sydenham Hill-road School, Lewisham, for the London County Council :—

C. Kite & Co.	£600 0
Brightside Foundry & Engineering Co., Ltd.	560 0
G. N. Haden & Sons	557 0
Wippell Bros. & Row	540 0
G. N. Haden & Sons	538 0
J. Defries & Sons, Ltd., 147, Houndsditch*	522 5

[Messrs. G. N. Haden & Sons submit an alternative tender for the supply of an apparatus on the "Reck patent circulator system."]

LONDON.—For the execution of certain sanitary works at the Hackford-road School, Brixton, for the London County Council :—

Lathey Bros.	£609	0	W. J. Mitchell & Son	£525	0
G. Parker	589	0	L. Whitehead & Co., Ltd.	506	0
Durbin & Katesmark	558	10	J. & C. Bowyer	500	0
W. V. Goad	555	0	R. P. Beattie, 191, Victoria-street*	481	10
Davis & Bennett	543	0			

LONDON.—For constructing the boys' offices at the Kilburn-lane School, Paddington, N., for the London County Council :—

G. Neal	£398	0	Cowley & Drake	£320	0
Durbin & Katesmark	359	0	G. Godson & Sons	315	0
Davis & Bennett	353	0	F. Bull	299	0
J. & M. Patrick	329	0	R. P. Beattie, 191, Victoria-street*	286	8

LONDON.—For erection of buildings, etc., in connexion with a housing scheme at Lower Cross-road, Fleet-road, Hampstead, for the Hampstead Borough Council. Mr. O. E. Winter, Borough Engineer, Town Hall, Hampstead :—

Mattock & Parsons	£13,356	J. & M. Patrick	£11,899
Martin, Wells, & Co., Ltd.	12,560	J. Appleby & Sons	11,800
A. Hudson & Co.	12,289	Cowley & Drake	11,644
G. Wallis & Sons, Ltd.	12,273	C. Wall, Ltd.	11,568
Perry & Co.	12,100	E. J. Saunders	11,489
Knight & Son	11,985	W. Lawrence & Son	11,484
B. E. Nightingale	11,936	J. Guttridge	11,480
Johnson & Co., Ltd.	11,900	Davey & Jones	11,356
		J. Parsons	11,355

TENDERS—*Continued on page* 163.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be Delivered
*Preparation and Compilial of Plan, etc.	Fakenham P.S.A.....	.....	Feb. 25

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tenders, etc., supplied by	Tenders to be Delivered
Cast-Iron Pipes and Specials	Hull Corporation	F. J. Bancroft, City Water Engineer, Alfred Gelder-street, Hull..	Feb. 11
Thirty-seven Cottages at Mountain Ash	Aberffrwd Building Club.....	Morgan & Elford, Architects, Mountain Ash	Feb. 13
Twelve Steel Wreck Buoys	Trinity House	A. Owen, Trinity House, London, E.C.	do.
Cast-Iron Buoy Sinkers.....	do.	do.	do.
Deck Bridges	Rohilkund and Kumaon Rlwy. Co.	E. L. Marryat, 237, Gresham House, Old Broad-st., London, E.C.	do.
Seven Houses, Rectory-lane, Winlaton	.....	T. Robson, Derwent View, Winlaton	do.
Dwelling-House, White Horse Inn, Elgin	.....	R. B. Pratt, Architect, Town and County Bank-buildings, Elgin	do.
Painting Roof, Swimming Bath, Woodside Baths ..	Halifax Waterworks Committee ..	R. J. Hartley, Waterworks Engineer, Gibbet-street, Halifax	do.
Materials	Colne Highways Committee	T. H. Hartley, Borough Surveyor, Town Hall, Colne	do.
Private Street Works.....	Halifax Highways Committee	J. Lord, Borough Engineer, Town Hall, Halifax	do.
Bradford Golf Clubhouse Extension, Hawksworth ..	.....	Adkin & Hill, Architects, Prudential-buildings, Bradford	do.
Three Houses and Outbuildings, Scar Head, Norland	.....	S. Wilkinson, Architect, Sowerby Bridge.....	do.
350 tons of 2½-in. Rubble.....	Tynemouth Borough Council.....	J. F. Smillie, Borough Surveyor, Tynemouth.....	do.
450 tons of Northumberland Whinstone Setts	do.	do.	do.
Refuse Destructor Buildings and Boiler House	Middleton Education Committee ..	S. Pauls, Borough Electrical Engineer, Town Hall, Middleton ..	do.
Road Works, Pyenot Hall-lane	Liversedge U.D.C.....	F. Langley, Surveyor, Council Offices, Liversedge.....	do.
Paving, etc., Springfield-lane	Morley Corporation	W. E. Putman. Borough Engineer, Town Hall, Morley	do.
Stores, Materials, etc.	Bootle Corporation	Borough Engineer's Office, Town Hall, Bootle	do.
*Works and Materials (One Year).....	Hendon U.D.C.....	Council's Engineer, Council Offices, Hendon, N.W.	do.
Steel Rails, Fishplates, and Sleepers (30 miles).....	Crown Agents for Colonies	Office of the Crown Agents, Whitehall-gardens, London, S.W. ..	Feb. 14
Stores	Bombay, etc., Railway Co.....	T. W. Wood, Sec., Gloucester House, Bishopsgate-st. Without, E.C.	do.
Artificial Stone Paving, etc.....	Stourbridge U.D.C.	F. Woodward, Surveyor, Town Hall, Stourbridge	do.
Main Switchboard, etc.	Manchester Tramways Committee..	J. M. McElroy, 55, Piccadilly, Manchester	do.
Materials	Bury Sewering, etc., Committee ..	A. W. Bradley, Borough Engineer, Municipal Offices, Bury	do.
Alterations in Sheds, Cattle Market	Glasgow Corporation	Office of Public Works, City-chambers, Glasgow	do.
Firebricks and Fireclay.....	do.	A. Wilson, 45, John-street, Glasgow	do.
Fire Alarms, Telephones, etc., at Asylum	Newport Visiting (Lunacy) Comm.	A. J. Wood, Architect, 22, Surrey-street, Strand, London, W.C...	do.
Alteration of Council School at Rhodes.....	Middleton Education Committee ..	W. Welburn, Borough Surveyor, Town Hall, Middleton	do.
Repairs to Platform of Large Hall, Town Hall	Banbury Town Council	N. H. Dawson, Borough Surveyor, Town Hall, Banbury.....	Feb. 15
Alterations, etc., Court Hall, Monkton	.....	E. H. Harbottle & Son, Architects, County-chambers, Exeter ..	do.
10-ton Steam Roller	Exeter Corporation	T. Moulding, City Engineer, 7, Southernhay West, Exeter.....	do.
Metal for Roads, Gorbals and Paisley Divisions....	Renfrew C.C.....	W. H. Hill, 194, Ingram-street, Glasgow.....	do.
Watering Streets	Hoddesdon U.D.C.	R. Lindon, Surveyor, High-street, Hoddesdon	do.
Shop Front, No. 2, Market-buildings, Kirkgate	Bradford Corporation	F. E. P. Edwards, City Architect, Brewery-street, Bradford	do.
Deep Well Pump for Electricity Works	Ashton-under-Lyne Corporation ..	E. Garside, Engineer, Town Hall-chambers, Ashton-under-Lyne..	do.
Painting Work, Sheffield Royal Hospital	.....	J. W. Robinson, Sec., the Board Room, Sheffield Royal Hospital	do.
Stores	Glasgow and S.-W. Railway Co. ..	Engineer, St. Enoch Station	do.
Wire Fencing	do.	do.	do.
Pair of Semi-detached Villas at Guiseley	Mr. F. Brook.....	H. Chippindale, Architect, Guiseley	do.
Additions to Claybanks, Guiseley	Mr. W. Claughton	do.	do.
Pair of Semi-detached Villas at Manston.....	Messrs. Peate & Crabtree	do.	do.
Roadworks, Duke-street, Elland.....	Elland U.D.C.	G. Hepworth, Surveyor, Brighouse	do.
Annual Contracts	Bacup Corporation	Borough Surveyor's Office, Bacup.....	do.
Alteration of Premises in Wellington-street, Leeds..	.....	S. E. Smith, Architect, 12, South-parade, Leeds	do.
550 lineal yds. Wrought-Iron Fencing	Enfield U.D.C.	R. Collins, Surveyor, Public Offices, Enfield	do.
*Supply of Road Materials, Royal Parks	Commissioners of H.M. Works, etc.	H.M. Office of Works, Storey's-gate, S.W.	do.
Stores	Blackburn Electricity Committee..	Boro' Elec. Engr., Corporation Elec. Wks., Jubilee-st., Blackburn	Feb. 16
Reconstruction of Minshull-street Bridge.....	Manchester Improvement Com. ..	City Surveyor's Office, Town Hall, Manchester	do.
Club Premises and House, Wheatley Hill.....	Workmen's Social Club & Institute	H. T. Gradon, Architect, 22, Market-place, Durham	do.
Private Street Works	Croydon R.D.C.	R. M. Chart, Surveyor, Town Hall, Croydon	do.
1,000 tons of Lime.....	Salford Gas Committee	W. W. Woodward, Engineer, Gas Offices, Bloom-street, Salford	do.
Labour for Repairing, etc., Carriageways	Stockport Highways Committee ..	J. Atkinson, Borough Surveyor, Stockport.....	do.
Labour for Mason's Work on Footpaths, etc.	do.	do.	do.
Carting	do.	do.	do.
Materials	do.	do.	do.
1,000 lineal ft. of Wrought-Iron Railings	Sutton U.D.C.	Engineer to Council, Sutton, Surrey.....	do.
Lime to Sewage Works..	Wolverhampton Corporation	W. Clifford, Sewage Outfall Works, Wolverhampton.....	do.
Three Locomotive Engines and Tenders	East Argentine Railway Co.	R. J. Fennessy, Sec., Winchester House, 50, Old Broad-st., E.C.	Feb. 17
Stone etc.	Hardingstone R.D.C.	J. C. Sturgess, Surveyor, 13, Lutterworth-road, Northampton ..	do.
C.-I. Pipes, Castings, Water Meters, Hydrants, etc. ..	Swansea Town Council.....	Waterwork's Engineer, Guildhall, Swansea	do.
Stores, Work, etc.	do.	Borough Surveyor, 13, Somerset-place, Swansea.....	do.
Lining Water Tank with Callender's Bitu. Sheeting	Rhondda U.D.C.	O. Thomas, Engineer, Gas and Water Offices, Pentre, Glam.	do.
Cement and Concrete Work at Tank	do	do	do.
*Enlargement of Sorting Office, Willesden	H.M. Office of Works	J. Wager, H.M. Office of Works, Storey's-gate, S.W.	do.
Materials	Salford Corporation.....	Borough Elect. Engr.'s Office, Frederick-rd., Pendleton, Manchester	Feb. 18
Making up Road at Sedgbrook Hospital, Plumpton	East Sussex Western Hospital Com.	J. Miles, 173, High-street, Lewes	do.
Tramway Stores.....	Sheffield Corporation	A. R. Fearnley, Tramways Department, Town Hall, Sheffield ..	do.
Two Lock-up Shops, Pontypridd	Town Hall and Market Co.	A. O. Evans, Williams, & Evans, Archs., P.O.-chbrs., Pontypridd	do.
Stores, etc.	Middleton Corporation	E. E. J. Anderson, Gas Engineer, Town Hall, Middleton	do.
Materials	do.	W. Welburn, Borough Surveyor, Town Hall, Middleton	do.
Fitting Vestry Hall, L'pool-rd., Patricroft, as Library	Eccles Corporation	E. Parkes, Town Clerk, Town Hall, Eccles.....	do.
Thirty-five Houses, Blaencuffin-road, Llanhilleth ..	Maesycnew Building Co., Ltd.	M. Gorman, Secretary, Ross Lea, Llanhilleth, Mon.	do.
Materials	Burton-on-Trent Corporation.....	G. T. Lynam, Borough Engineer, Town Hall, Burton-on-Trent ..	do.
Church Schl for Seventy, Thurlestone, nr. Kingsbridge	.....	Rectory, Thurlestone, Kingsbridge, South Devon	Feb. 20
Materials, etc.	Surbiton U.D.C.	Offices of the Council, Ewell-road, Surbiton	do.
Extension of Halton Sewage Works	Hunslet R.D.C.....	C. H. Marriott, Son, & Shaw, Engrs., Church-st.-chbrs., Dewsbury	do.
Wiring and Fittings for Electric Light at Stores ..	Batley Co-operative Society	H. B. Buckley, Architect, 85, Commercial-street, Batley.....	do.
Fifty Working-class Houses at Wattsville, N. Risia	Risia U.D.C.....	A. J. Dardis, Surveyor, Council Office, Risia	do.
Supplies	Rathmines and Rathgar U.D.C. ..	F. P. Fawcett, Clerk, Town Hall, Rathmines.....	do.
Electricity Stores	do	do.	do.
Retorts, etc.	Sowerby Bridge U.D.C.	A. W. Bissell, Engineer, Gas Works, Sowerby Bridge	do.
Retort Bench	do.	do.	do.
Main Road Material	Berkshire Highways Committee ..	J. F. Hawkins, County Surveyor, Bank-chbrs., Cross-st., Reading	do.
250,000 Wire Cut Red Bricks	Loughborough Corporation.....	C. E. Robinson, Engineer, Blackbrook, near Loughborough.....	do.
60,000 Wire Cut Blue Bricks	do.	do.	do.
200 tons of Jersey Gravel.....	Wallasey U.D.C.	W. H. Travers, Public Offices, Egremont, Cheshire	do.
Materials and Labour	Rawtenstall Coporation	Borough Surveyor, Municipal Offices, Rawtenstall	do.
Carriage Timber	Great Western Railway	G. K. Mills, Paddington Station, London	do.
Stone for Roads	Beverley Highways Committee	E. Picker, Surveyor, Beverley	do.
*Roadmaking, etc., at Winchmore Hill	Southgate U.D.C.	Council's Surveyor, Council Offices, Palmers Green, N.	do.
*Painting, etc., Rackham-st. Infirmary, Notting Hill	St. Marylebone Board of Guardians	Steward of the Infirmary, Rackham-street, Notting Hill, W.	do.
*Making-up Roads	Beckenham U.D.C.	Council's Surveyor, Beckenham	do.
*Erection of Free Library, Long Eaten	The Committee	Gorman & Ross, Architects, Long Eaton.....	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom advertised.	Forms of Tender, etc., supplied by	Tenders to be Delivered
Quarrying and Carting Road Materials	Midlothian C.C.	Road Office, County-buildings, Edinburgh	Feb. 21
Private Street Works	Sowerby Bridge U.D.C.	R. W. Evans, Clerk, Commercial Bank-chambers, Halifax	do.
Switch Panels, etc.	Swindon Corporation	J. G. Griffin, Engineer, Electricity Works, Swindon	do.
Motor Generators and Fine-Wire Balancers	Manchester Electricity Committee	F. E. Hughes, Sec., Electricity Depart., Town Hall, Manchester	do.
Materials	Acton District Council	D. J. Ebbetts, Surveyor, 57, High-street, Acton, W.	do.
Repair of Roads	Masham U.D.C.	C. F. P. Edmundson, Clerk, Masham	do.
Sewers	Stanley U.D.C.	J. Routledge, Surveyor, Council Offices, Stanley	do.
Team Labour	Hardingstone R.D.C.	J. C. Sturgess, Surveyor, 13, Lutterworth-road, Northampton	Feb. 22
Road Materials	Headington R.D.C.	J. C. Coates, District Surveyor, Hartfield Cottage, New Headington	do.
Carting	do.	do.	do.
Bridge at Nel-Pau-lane, Westleigh	Leigh Corporation	T. Hunter, Borough Engineer, Leigh, Essex	do.
23,0 0 tons of Granite	Bucks C.C.	R. J. Thomas, County Surveyor, Aylesbury	do.
*Underrgrd. San. Conveniences, Shepherd's Bush Green	Hammersmith Borough Council	Borough Surveyor, Town Hall, Hammersmith	do
Arc Lamp Carbons	Dublin Corporation	City Engineer, City Hall, Dublin	Feb. 23
Sewer, Royston-road, Burnham	Malling R.D.C.	C. Souter, Sanitary Inspector, West Malling	do.
Stone	Escrick R.D.C.	F. A. Camidge, Clerk, 3, Stonegate, York	do.
46 lineal yds. Wrought-Iron Fencing, Railway-street	Chatham Town Council	C. Day, Borough Surveyor, Town Hall, Chatham	do.
*Annual Contracts	Islington Borough Council	Town Hall, Upper-street, N.	do.
Hauling	Dore R.D.C.	P. Gwillim, Cwm Dulas, Pontrilas	Feb. 24
*New Sorting Office, Shepherd's Bush, W.	Commissioners of H.M. Works, etc.	J. Wager, Office of Works, Storey's-gate, S.W.	do.
Supplies	Newton-in-Makerfield U.D.C.	Stores Clerk, Gas Works, Earlestown	Feb. 25
Alterations, etc., to National Schools, Raglan		W. H. D. Caple, Architect, Church-street-chambers, Cardiff	Feb. 27
*Heating of New Schools, Higher Broughton	Salford Borough Education Com.	C. K. & T. C. Mayor, Archs., 41, John Dalton-street, Manchester	do.
*Supply and Erection of Temporary Buildings	Dept. of Agric. & Tech. Inst., Ireland	Offices of Department, 4, Upper Merrion-street, Dublin	Feb. 28
Wesleyan Methodist Church, Durham-rd., Gateshead		W. Stanley Ellison, Architect, 22, Sir Thomas-street, Liverpool	do.
Road Materials, Cartage, and Team Labour	East Sussex Roads & Bridges Comt.	F. J. Wood, County Surveyor, County Hall, Lewes	do.
Making good River-street	Brighouse Highways Committee	S. S. Haywood, Borough Engineer, Municipal Offices, Brighouse	do.
*New Post Office at Batley	Commissioners, H.M. Office of Wks.	H.M. Office of Works, Storey's-gate, S.W.	do.
*Making of New Road	Ealing Town Council	Borough Engineer, Town Hall, Ealing, W.	do.
*Supplying and Fixing Hydraulic Lift	Newton Abbot Union	The Clerk, Newton Abbot	Feb. 29
Cast-Iron Pipes (2¼ miles)	Glenisford U.D.C.	J. T. Eayrs, Engr., Clarence-chbrs., 39, Corporation-st., Birmingham	Mar. 1
Laying Pipes, etc.	do.	do.	do.
Brickwater Tower and Pumping Station	do.	do.	do.
Engine and Pump	do.	do.	do.
Steel Tank	do.	do.	do.
Newbridge Waterworks	Naas No. 1 R.D.C.	D. J. Purcell, Clerk, Council Office, Naas, Ireland	do.
Stores	Southend-on-Sea Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea	Mar. 2
Annual Contracts	Barking Town U.D.C.	H. Hargreaves, Public Offices, Barking, Essex	Mar. 3
Sewerage Disposal Works	Bilston U.D.C.	B. Latham, M.Inst.C.E., Parliament-mans'ns, Victoria-st., Westm'r.	Mar. 4
Annual Contracts, Engineer's Department	Wimbledon U.D.C.	Engineer & Surveyor, Council Offices, Wimbledon	do.
Annual Contracts, Electricity Department	do.	Chief Electrical Engineer, Durnsford-road, Wimbledon	do.
Stone	Culham R.D.C.	B. Challenor, 59, Stert-street, Abingdon	Mar. 6
Pipe Sewers (Sewerage Works)	Boston U.D.C.	J. Rowell, Engineer, Church-lane, Boston, Lincolnshire	Mar. 7
Sewerage Works, Weston	Runcorn R.D.C.	J. Diggle & Son, Engineers, 14, Victoria-street, Westminster, S.W.	do.
*Public Library, High-street, Bromley	Borough of Bromley	Town Clerk's Office	do.
Electric Lighting Works	Stoke Newington Borough Council	Talbot & Stevenson, Engineers, 26, Victoria-street, S.W.	Mar. 8
Concrete to Footways and Back Streets	South Shields Corporation	S. E. Burgess, Borough Engineer, Chapter-row, South Shields	do
Electrical Plant (five contracts)	do.	J. H. Cawthra, Borough Electrical Engineer, South Shields	Mar. 13
*Municipal Buildings	South Shields Town Council	Central Hall, Chapter-row, South Shields	Mar. 18
Deepening, etc., St. George's Channel, Bermuda	Crown Agents for Colonies	Office of the Crown Agents, Whitehall-gardens, London, S.W.	Apr. 10
Pair of Houses, Moorhead, Shipley	.....	S. 171, "Observer" Office, Bradford	No date.
Five Houses, Bradford (Mason Labour only)	.....	W. Clark & Sons, Fourlane-ends, Bradford	do.
Two Cottages, Church-street, Abertridwr	.....	F. Harris, 13, High-street, Abertridwr	do.
Alterations, etc., "Green Dragon Hotel," Newtown	.....	H. Higginson, Architect, 3, Lonsdale-street, Carlisle	do.
Two 250 h.p. Furnaces for Calcium Carbide Manuf're.	.....	W. Tatlow, 20, Fleet-street, Dublin	do.
Sinking Shaft at West Stanley Colliery	.....	The Manager	do.
Asphalting 200 sup. yds. Ashington Colliery	.....	T. Boutland, Bandmaster, Ashington	do.
Machine for Washing Broken Stone for C'ncr'te M'k'g.	Loughborough Corporation	C. E. Robinson, Engineer, Blackbrook, near Loughborough	do.
Villa, Husthwaite, near Easingwold	.....	T. Stokes, Architect, Thirsk	do.
Four Houses, Sherburn	Mrs. Lolley	W. Lolley, Avenue-crescent, Harehills-road, Leeds	do.
*Erection of New Infirmary, etc.	Steyning Union	Clerk, Union Offices, New Shoreham, Sussex	do.

PUBLIC APPOINTMENT.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Surveying and Estimating Assistant	London C.C.	300*l.*	Feb. 24

Those marked with an (*) are advertised in this number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, xvii.

TENDERS.—*Continued from page* 161.

LONDON.—For the erection of three pair of semi-detached houses, Regent's Park-road Estate, Finchley, for the Birkbeck Bank. Mr. T. Merrison Garrood, architect, Birkbeck Bank-chambers, W.C. :—

H. Line	£4,680	A. W. Jaggers & Co., of Albert's Works, Deptford, and Bromley-by-Bow*‡	£3,240
J. Johnson & Sons	4,538		
Read & Wilkinson	4,480		
C. Wall, Ltd.	4,250		
W. J. King	3,798		
J. Roberts	3,150		

‡ Including extras.

LUTHRIEBANK.—For alterations and additions to Luthriebank, Fife. Messrs. Thoms & Wilkie, architects, 46, Reform-street, Dundee. Quantities by architects :—

Mason : J. & D. Ross, Newburgh, Fife*	£345	0	0
Joiner : W. Buist, Woodhaven, Wormit, Fife*	329	17	0
Plumber : D. Brown, South Tay-street, Dundee*	117	0	0
Plasterer : G. Kilgour, 126, Blackness-road, Dundee*	68	3	5
Slater : T. Black, South-street, St. Andrews, Fife*	50	5	8

MANOR PARK.—For the enlargement of Manor Park School, for the East Ham Education Committee. Mr. R. L. Curtis, architect, 11 and 12, Finsbury-square, E.C. :—

Almond & Son, Ltd.	£8,100	F. & A. Willmott	£7,297
J. Chessum & Sons	7,700	A. E. Symes	7,202
J. Gregory	7,601	W. Gregar & Son	7,200
Holliday & Greenwood, Ltd.	7,587	H. C. Horswill	7,199
B. E. Nightingale	7,528	J. S. Hammond & Son	6,959
Stimpson & Co.	7,500	W. J. Maddison, Clarkson-street, Canning Town*	6,829
H. J. Carter	7,357		
C. North	7,347		
J. W. Jerram	7,298		

MERTHYR.—For erecting stabling, lofts, etc., with boundary walls and out-buildings, for Mr. S. P. Leyshon, Mr. Arthur Marks, architect and surveyor, Merthyr Express-chambers, Merthyr Tydfil :—

W. Watts	£1,435	W. C. Jones	£1,247
J. Jenkins	1,420	R. Lloyd, George-town, Merthyr*	1,180
J. Williams	1,375		
E. L. Sullivan	1,259		

[Architect's estimate, £1,333 12s.]

NEWCASTLE-UPON-TYNE. — For new school buildings, for the Governors of the Royal Grammar School :—

S. Fenwick & Co.	£30,472	Watt Bros.	£24,318 18 8
D. & J. Ranken	27,111	A. Pringle	24,307 0 0
J. L. Miller	26,503	Smith Bros., Ltd.	24,275 0 0
G. H. Mauchlen	26,201	J. C. Ferguson	24,205 3 8
J. Howe & Co.	25,814	Armitage & Hodgson	24,146 0 0
T. Weatheritt	25,664	Nicholls & Co.	24,072 15 0
S. Easten	25,351	W. Foster	23,980 0 0
W. T. Weir	25,302	J. W. Braithwaite & Co.	23,496 3 8
J. C. Hope	25,277	T. Hunter	23,450 14 2
S. Sheriff & Sons	25,251	Middlemiss Bros.	23,256 12 9
S. F. Davidson	25,228	T. Riley	22,959 15 1
J. & W. Lowry	25,108	J. Parkinson & Sons, Ltd.	22,912 2 4½
E. Weatherley	25,085	H. Arnold & Son*	21,871 13 5
T. Lumsden	24,922		
W. Worley, jun.	24,752		
I. Bewley	24,502		
Elliott Bros.	24,349		

NORTH COWTON.—For house, North Cowton, Darlington, for Mr. W. Peacock. Mr. J. E. Walton, architect, Northallerton :—

Stockdale & Walton, East Cowton* £396

NORTH OTTERINGTON.—For alterations to house, for Mr. J. Hutton, M.P. Mr. J. E. Walton, architect, Northallerton. No quantities :—

T. & J. Willoughby, Northallerton* £140

RAPHOE.—For additions and alterations to manse, Raphoe, Londonderry, for the Rev. J. Craig Wallace. Mr. J. M'Intyre, architect, Letterkenny :—

J. McClay & Sons	£345 12 0	E. McCosker, Raphoe*	£276 0 0
J. Baird	297 9 6	J. Johnston	285 0 0

SELBY.—For the completion of a Dutch barn at Chester Court Hall, for Messrs. J. & W. Gray, Chester Court Hall, Selby. Messrs. Thompson & Kirton, architects, Exchange-buildings, Lowgate, Hull :—

Wright & Son	£171 18	Dibnak	£100 0
W. & J. Oakes	160 0	A. Dougill & Co., Ltd., Gt. George-street, Leeds*	89 10
J. V. Coonan	119 10		
D. Downer	115 0		
T. W. Ward	113 0		

SHORNCLIFFE CAMP.—For erecting a new post-office :—

J. J. Wise	£2,296 0 0	Gann & Co.	£1,774 0 0
J. Gosby	2,221 13 9	N. White	1,745 0 0
F. Nicholls	2,200 0 0	G. Castle & Son	1,699 16 0
T. L. Fearon	1,990 6 0	G. E. Wallis & Sons, Ltd.	1,694 0 0
E. J. Logan	1,949 0 0	G. Browning	1,669 0 0
R. Grayling	1,920 0 0	R. Webster	1,450 0 0
T. T. Denne	1,893 0 0		
East & Hyde	1,852 0 0		
G. H. Denne & Son	1,850 0 0		

SKIPTON.—For erecting a detached residence near Raikes-road. Mr. J. W. Broughton, architect, 19, High-street, Skipton :—

Builder : W. Daggett, Skipton* .....
Joiner : A. Shaw, Skipton* .....
Plasterer : T. Hudson, Skipton* £975
Painter and Plumber : G. H. Mason, Skipton*
Tilers : Thornton & Son, Skipton* .....

[Each trade let separately. There were about forty Tenders.]

SOUTHEND-ON-SEA.—For erection of houses, St. Mary's-avenue West, for Mrs. C. C. Herbert. Mr. C. Cooke, architect, Southend-on-Sea :—

E. Tomkins	£1,800	H. R. Wilkinson ..	£1,585
Whur & Campkin	1,700	C. Wingrave*	1,575

SOUTH SHIELDS.—For rebuilding business premises, No. 32, Fowler-street, South Shields, for Councillor J. W. Henderson. Bills of quantities by the architect, Mr. Fred Rennoldson, South Shields :—

J. Young....	£1,405 0 0	W. Wilson & Sons.....	£1,295 5 0
J. C. Nichol..	1,385 0 0	T. Banks	1,268 9 0
A. Ross	1,375 10 0	J. Carruthers	1,216 18 6
G. Thornton & Co.	1,317 8 0	R. Harper ..	1,212 16 6
Sheriff & Sons	1,300 0 0	W. Allison*..	1,200 2 1

SUTTON-IN-ASHFIELD.—For erecting Congregational church. Messrs. G. Baines & R. Palmer Baines, architects, 5, Clement's-inn, Strand, London, W.C. :—

T. H. Kingerlee & Sons.....	£4,261 0	Kerridge & Shaw	£3,926 0
Vallance & Blythe.....	4,223 0	W. Mawle & Co.	3,612 10
F. Messom	4,179 0	T. Barlow & Co.	3,500 0
Coulson & Lofts	4,060 0	A. Earnshaw ..	3,356 0
C. North	3,958 0	J. Greenwood, Wood-street, Mansfield* ..	3,320 0

SWINDON.—For roadmaking, paving, etc., Deburgh-street, Even Swindon Estate, for Mr. James Morrison, J.P. Messrs. William Drew & Sons, surveyors, Regent-circus, Swindon :—

J. Williams, Swindon* £395 2 9

[Four tenders received.]

THORNTON-LE-MOOR.—For erecting new stables, etc., for Messrs. Dover & Newsome Baxter, Ltd. Mr. J. E. Walton, architect and surveyor, Northallerton. Quantities by architect :—

S. Scott, Northallerton* £130 19 6

TUNBRIDGE WELLS.—For private street works, Culverden Down-road, for the Borough Council. Mr. W. H. Maxwell, Borough Engineer and Surveyor, Town Hall, Tunbridge Wells :—

E. J. Logan..	£5,582 15 9	T. Hallett & Son	£3,901 19 5
J. Jarvis & Son	4,100 0 0	F. Thacker ..	3,761 11 5
J. Crates & Son	4,100 0 0	W. Wilson ..	3,588 1 6
W. Arnold & Sons	4,038 1 3	W. H. Wheeler, London* ..	3,484 5 0

WALTHAM ABBEY.—For erecting a 25-ft. span road bridge over the Cobbin Brook, near the Green Man, for the Waltham Holy Cross Urban District Council. Mr. W. T. Streather, Surveyor, Town Hall, Waltham Abbey :—

L. & W. Patman.	£520 0	Grounds & Newton	£385 0
A. T. Catley	440 0	P. Paul, Waltham Abbey*	379 10
J. Oram	406 0		
A. Robbins.....	394 17		

[Surveyor's estimate, £400.]

WELLINGBOROUGH.—For erecting Baptist church. Messrs. George Baines & R. Palmer Baines, architects, 5, Clement's-inn, Strand, London, W.C. :—

Kerridge & Shaw	£2,649 0	R. Marriott	£2,375 0
A. T. Hawtin ..	2,460 0	O. P. Drever....	2,359 9
C. E. Bayes	2,440 0	G. Henson.....	2,350 0
Goodman & Murkitt.....	2,409 0	W. Stevens	2,343 6
H. Green	2,398 0	E. Brown & Son, Castle-street, Wellingborough*	2,325 0
Hacksley Bros...	2,379 0		

WENVOE.—For widening and reconstructing a portion of Twynvrodin-road, for the Llandaff and Dinas Powis Rural District Council. Mr. J. Holden, Engineer and Surveyor, Council Offices, 20, Park-place, Cardiff :—

W. Ball	£373 10 3
E. Osmond, Great House, Ely, Glam.*	303 15 6
H. Ringham	247 11 8

WIGSTON MAGNA (Leicestershire).—For the construction in Aylestone-lane of 156 lineal yds. of 12-in. stoneware pipe sewer, etc., for the Urban District Council. Mr. W. G. J. Clark, Surveyor, Council's Offices, Station-road, Wigston Magna. Quantities by Surveyor :—

O. Wright & Co.	£338 9 6	A. Palmer, Leicester* ..	£265 19 9
Stimson & Rollston	275 10 0		

WINCHMORE HILL.—For the installation of fire-alarms at Northern Hospital, Winchmore Hill, N., for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief :—

Leggatt & Huett	£650 0 0	J. Bryden & Sons	£310 10 0
Tamplin & Makovski, Ltd.	490 0 0	G. Weston & Sons	298 0 0
G. & H. Turner	484 0 0	Electrical Engineering & Maintenace Co.	295 0 0
J. T. Halsey ..	463 8 6	R. Melhuish, Ltd.	262 0 0
Tilley Bros. ..	461 0 0	Lea, Son, & Co.	251 0 0
C. W. Were & Co.	450 4 6	Cross & Cross ..	249 0 0
National Telephone Co., Ltd.	435 0 0	New System Private Telephone Co.....	228 13 6
Private Wire & Telephone Installation Co., Ltd.	397 0 0	Jackson Bros., The Broadway, Plaistow, E.*	210 10 0
Cox-Walkers ..	328 0 0		
Baxter & Impey	321 15 0		
A. H. Marshall	320 0 0		
Lawrences, Ltd.	320 0 0		

WITHERNSEA.—For remaking High Brighton-street, Withernsea, for the Urban District Council. Messrs. Thompson & Kirton, surveyors, Exchange-buildings, Lowgate, Hull :—

Contracts Nos. 1 *and* 2.

T. Burrell, Cleveland-avenue, Victor-street, Hull* £138 5

WOODBRIDGE (Surrey).—For erecting a new pavilion for scarlet fever, and small additions to administrative block, etc., at the Hospital, for the Guildford, Godalming, and Woking Joint Hospital Board. Mr. E. L. Lunn, architect, 36, High-street, Guildford :—

E. & J. H. Holden	£3,816	Martin, Wells, & Co.	£3,475
R. Smith	3,656	McC. E. Fitt	3,446
Swayne & Son	3,585	S. Ellis	3,445
T. H. Kingerlee & Sons	3,581	W. Smith & Sons..	3,350
Higgs & Outhwaite	3,537	Tribe & Robinson .	3,345
Crossby & Co.	3,531	H. C. Hughes	3,330
Jenkins & Sons, Ltd.	3,524	Mitchell Shalford*	3,320
Higlett & Hammond	3,504	Oak Building Co., Ltd.	3,316
Drowley & Co.	3,494		

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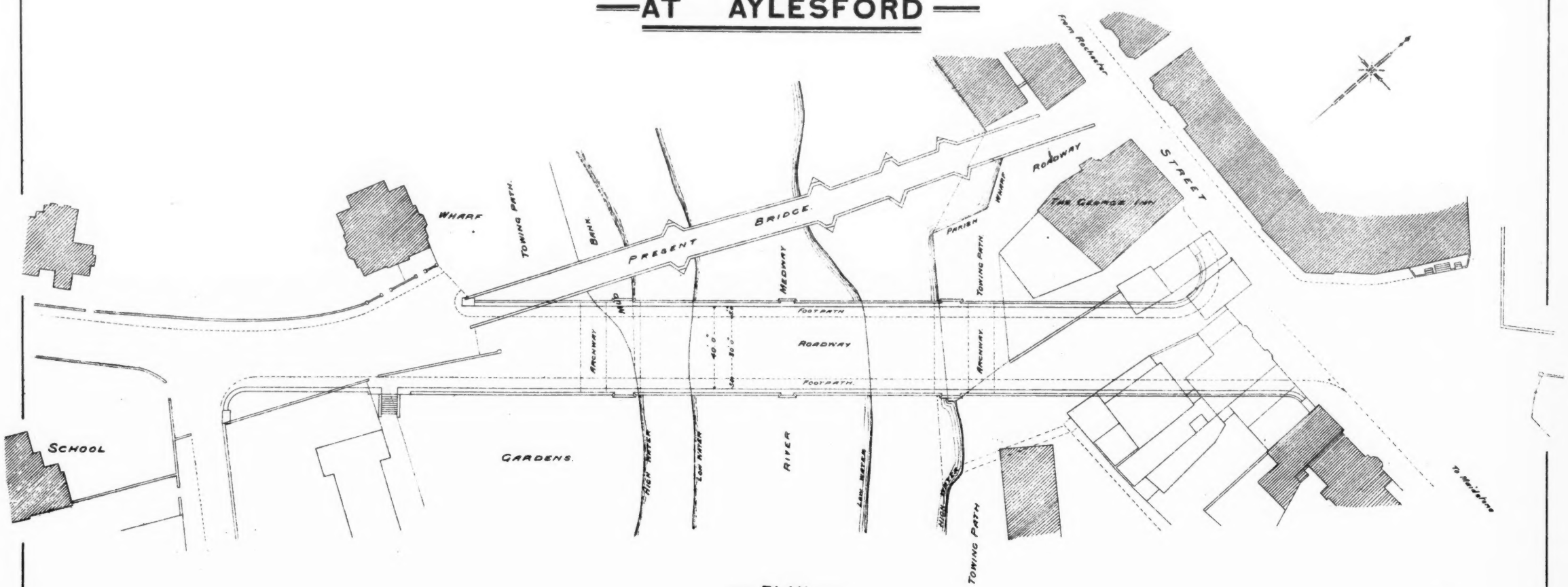
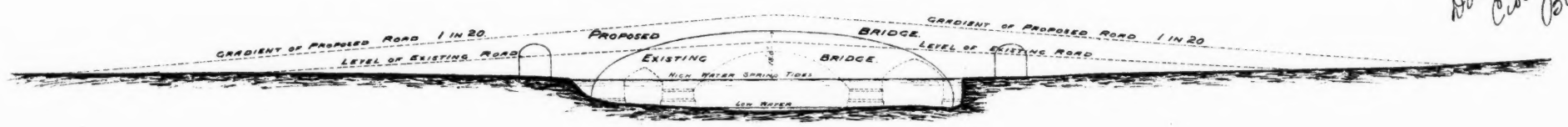
— DRAWING Nº 1 —

— PROPOSED BRIDGE OVER THE RIVER MEDWAY —
— AT AYLESFORD —



— PLAN —

Scale of Feet.


Gradient of Proposed Road 1 in 20
Level of Existing Road
Proposed Bridge.
Existing Bridge.
High Water Spring Tides
Low Water
Gradient of Proposed Road 1 in 20
Level of Existing Road

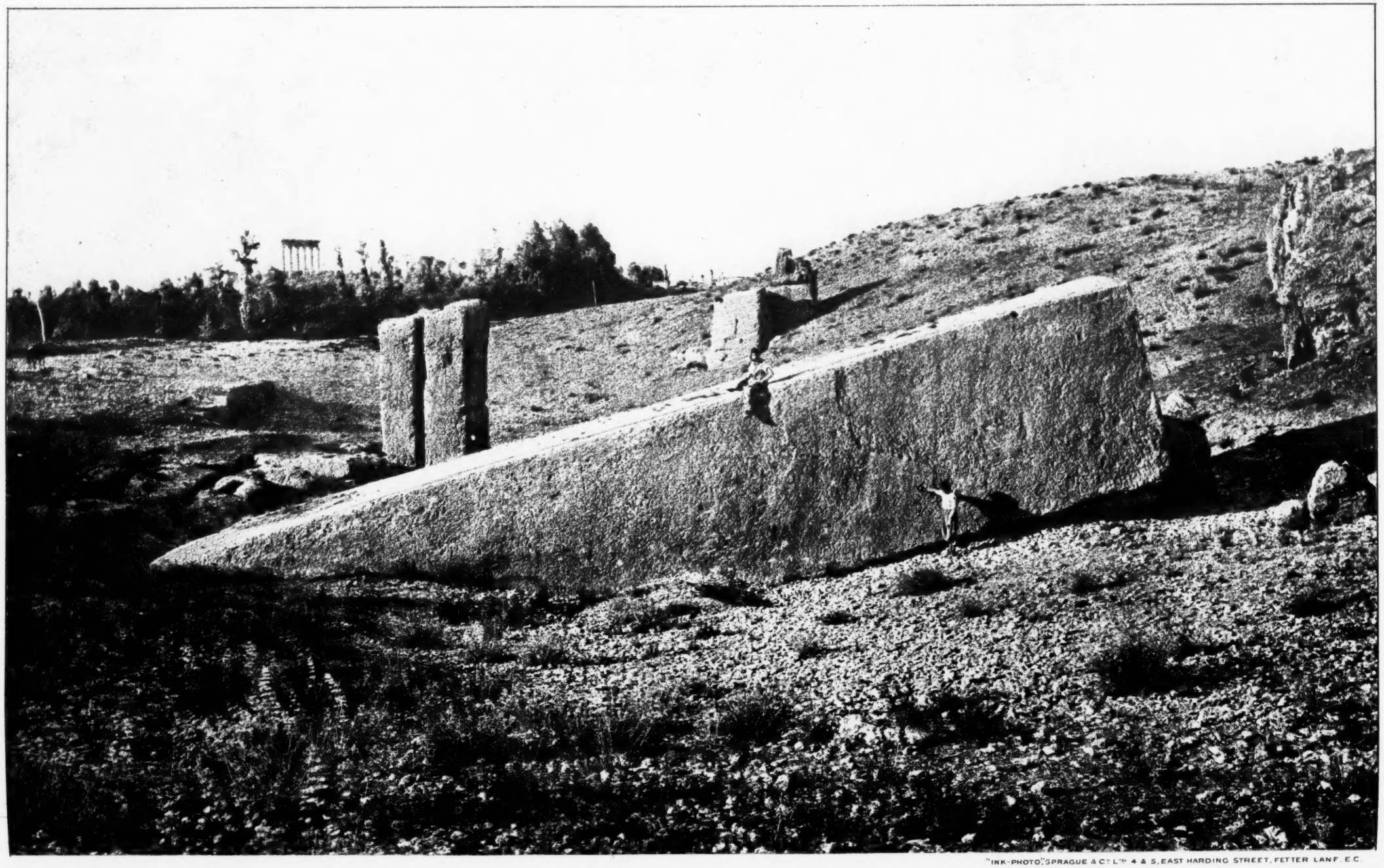
— SECTION ON LINE OF NEW BRIDGE —

Dodd & Dodd
Civil Engineers
Birmingham

PHOTO LITHO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

SECTION ON LINE OF NEW BRIDGE

PHOTO LITHO SHARDLOW & CO LTD 44 S.EAST HARDING STREET, FETTER LANE, E.C.



"INK-PHOTO," SPRAGUE & Co Ltd 4 & 5, EAST HARDING STREET, FETTER LANE E.C.

BAALBEK: THE GREAT STONE IN QUARRY.

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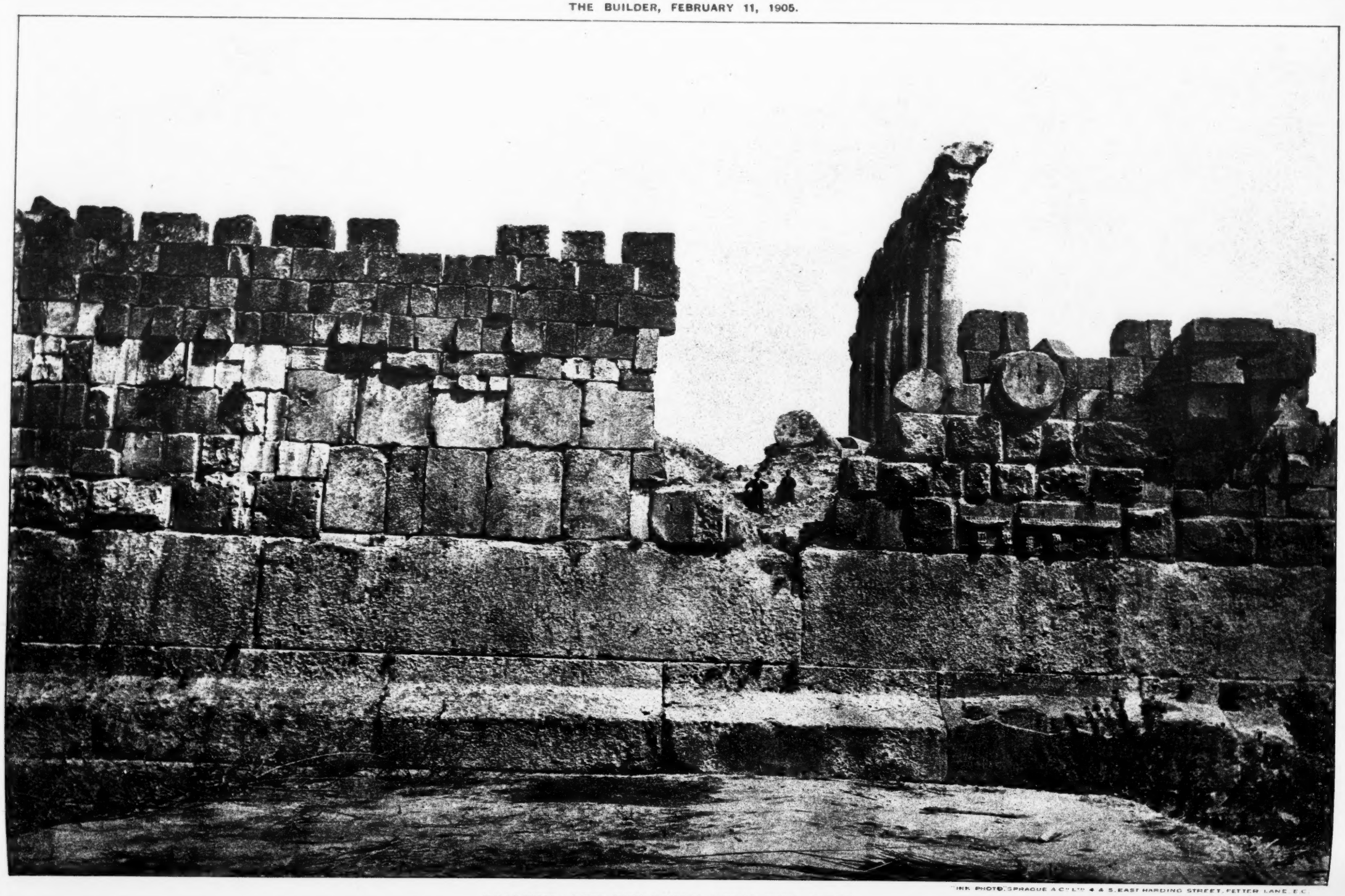

BAALBEK: THE TRILITHON FROM DUE WEST.

INK PHOTO. SPRAGUE & C.° LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

BAALBEK. THE TRILITHON FROM DUE WEST.

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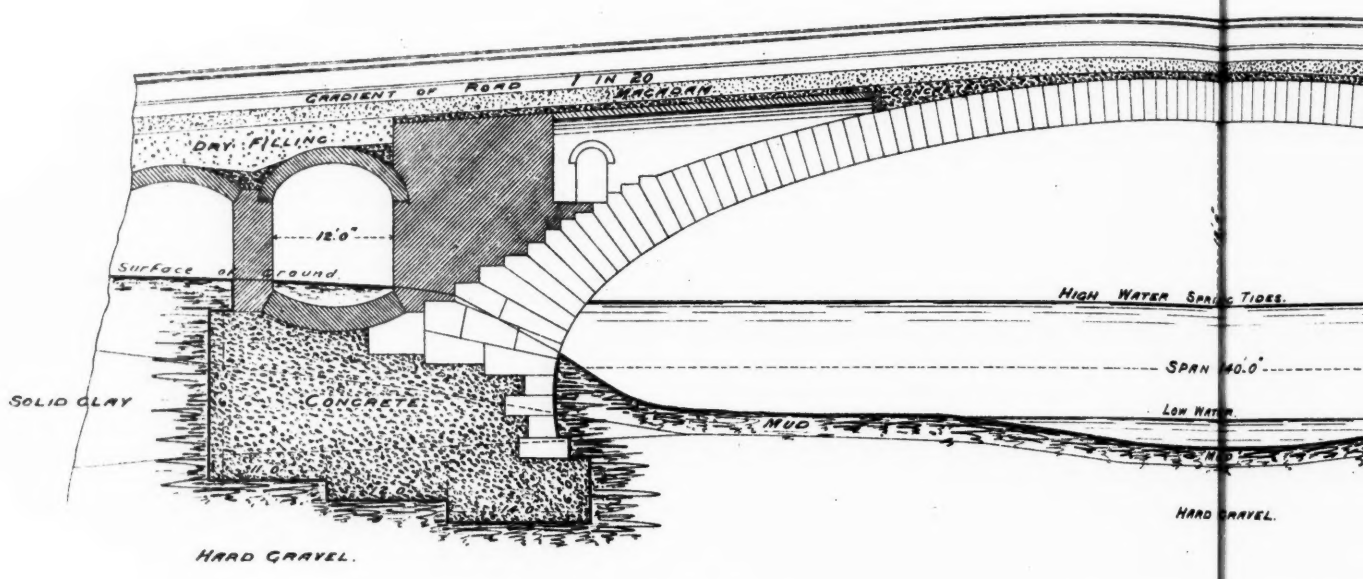
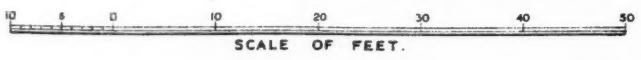
DRAWING Nº 3

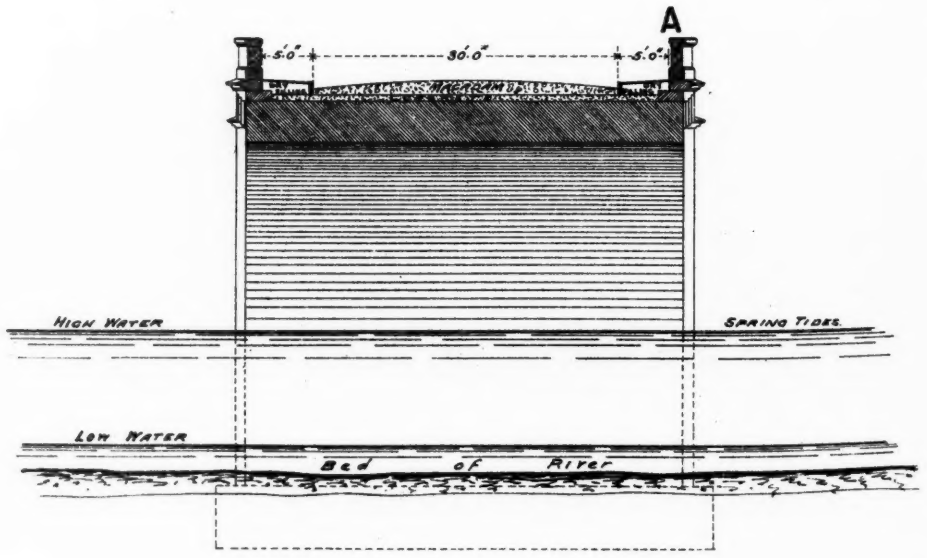
PROPOSED BRIDGE OVER T

AT AYLESFO



LONCITUDINAL SECTION

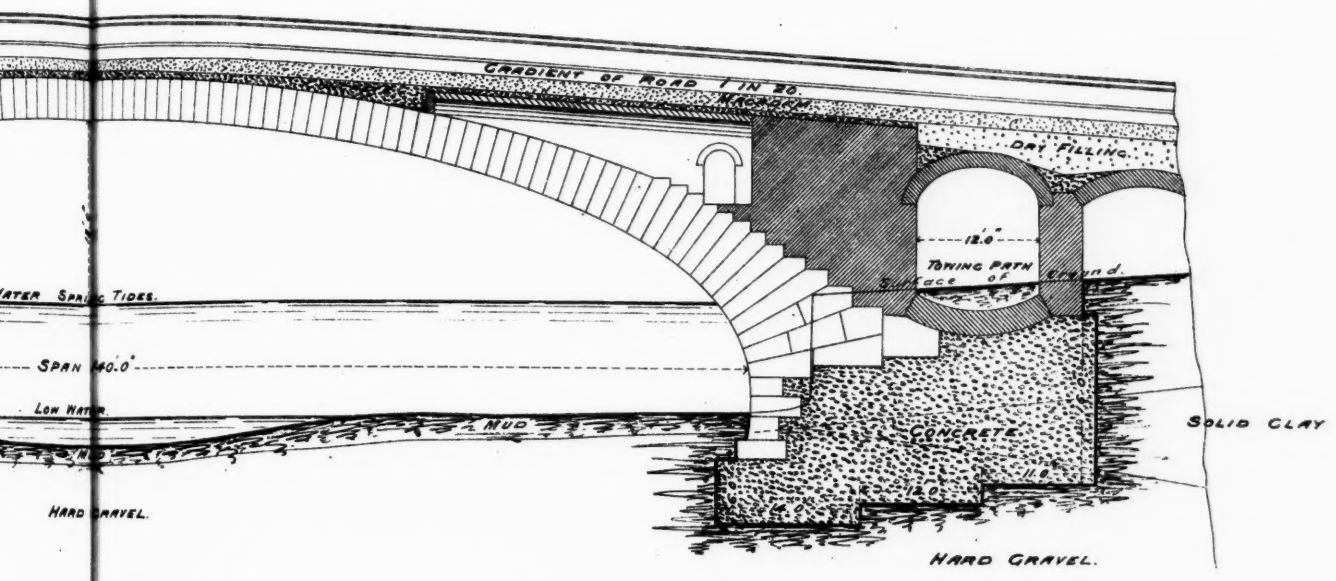




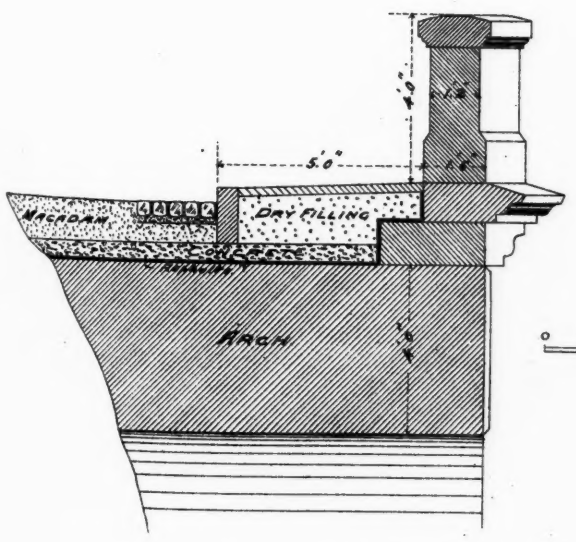
TRANSVERSE SECTION

OVER THE RIVER MEDWAY —

AYLESFORD —



LONGITUDINAL SECTION —



SCALE
0 1 2 3 4 5 10 FEET

— ENLARGED DETAIL —
— AT A. —

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Civil Engineers
Birmingham

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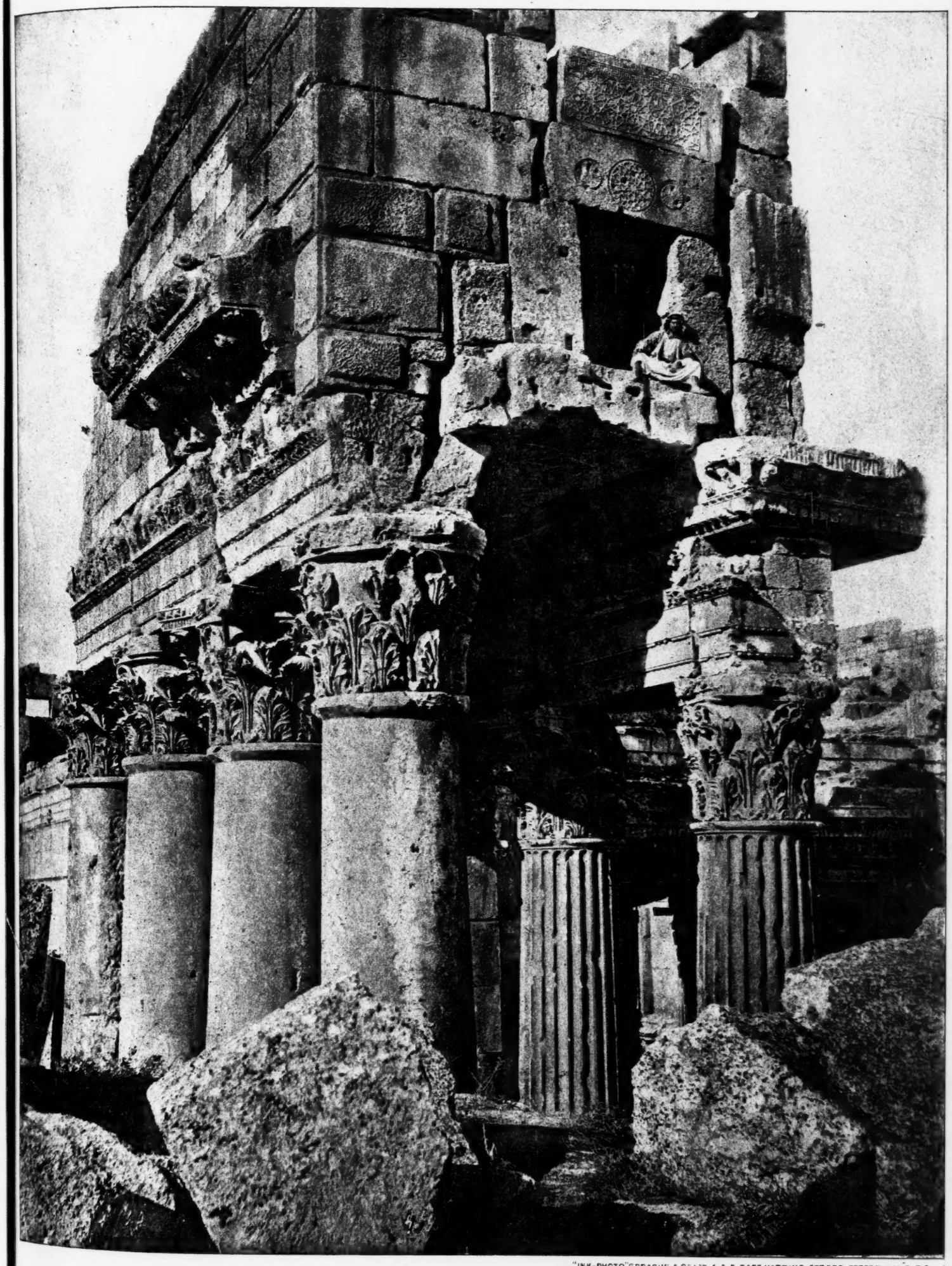

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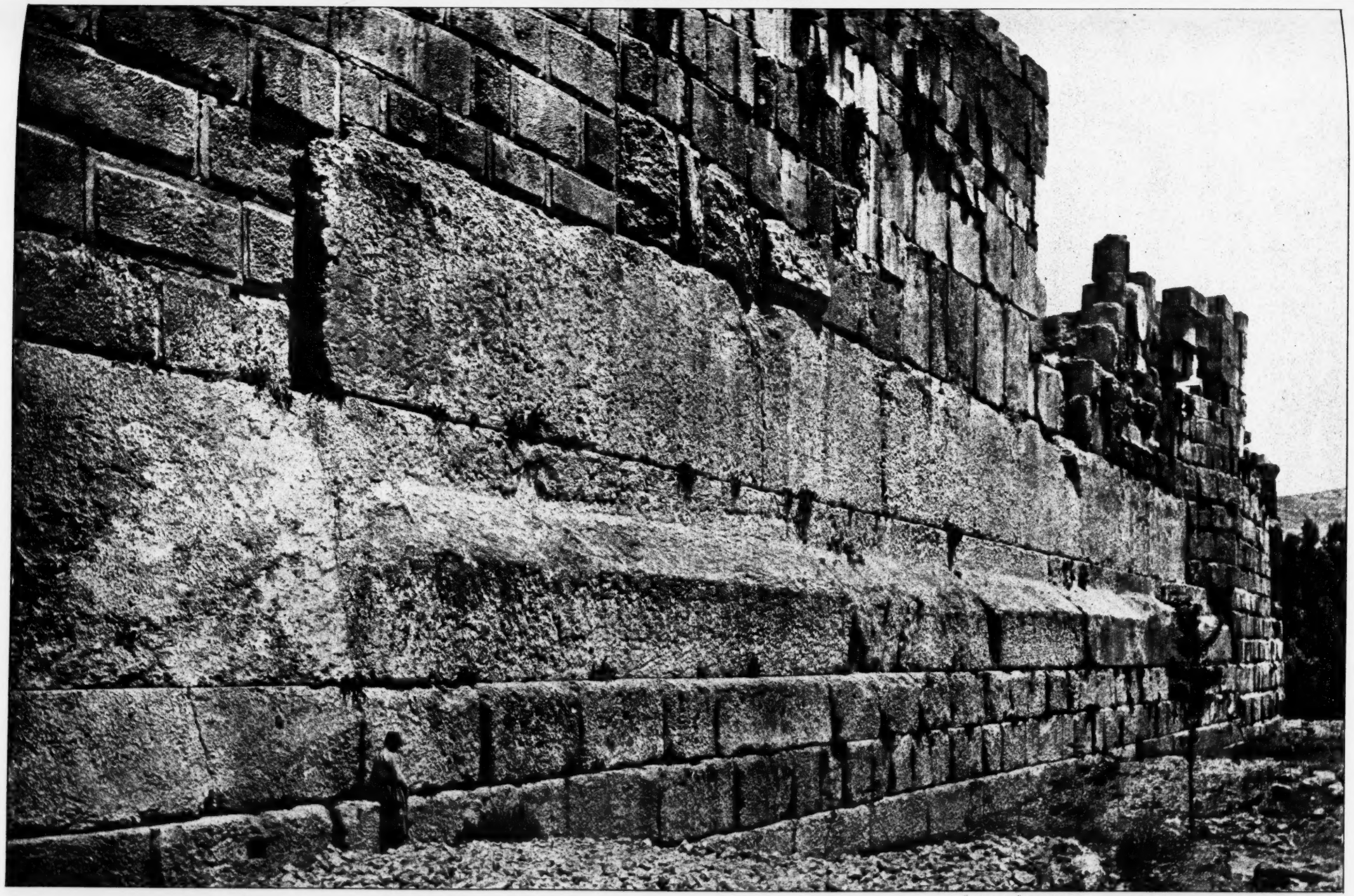
BAALBEK: PART OF THE TEMPLE OF JUPITER.

THE BUILDER, FEBRUARY 11, 1905.



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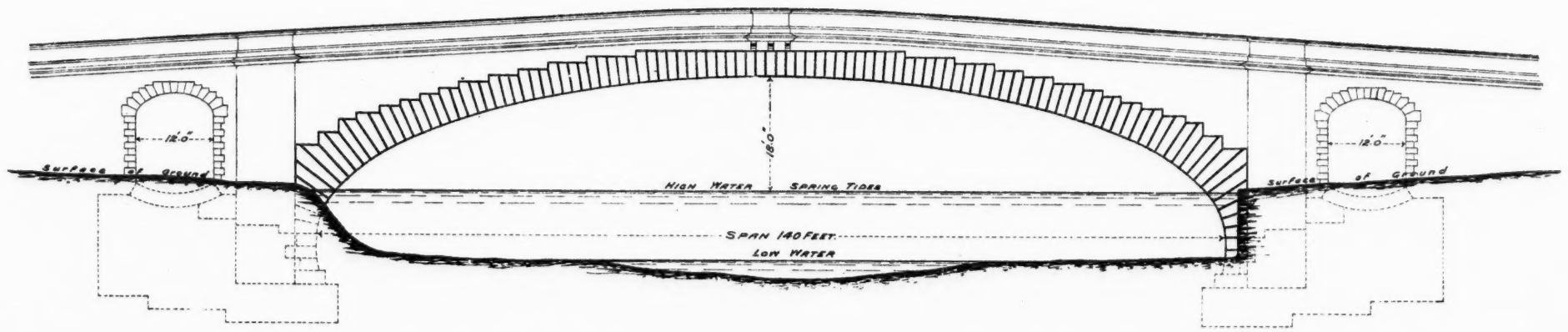
WEST WALL OF ACROPOLIS, BAALBEK: THE TRILITHON.

— DRAWING Nº 2 —

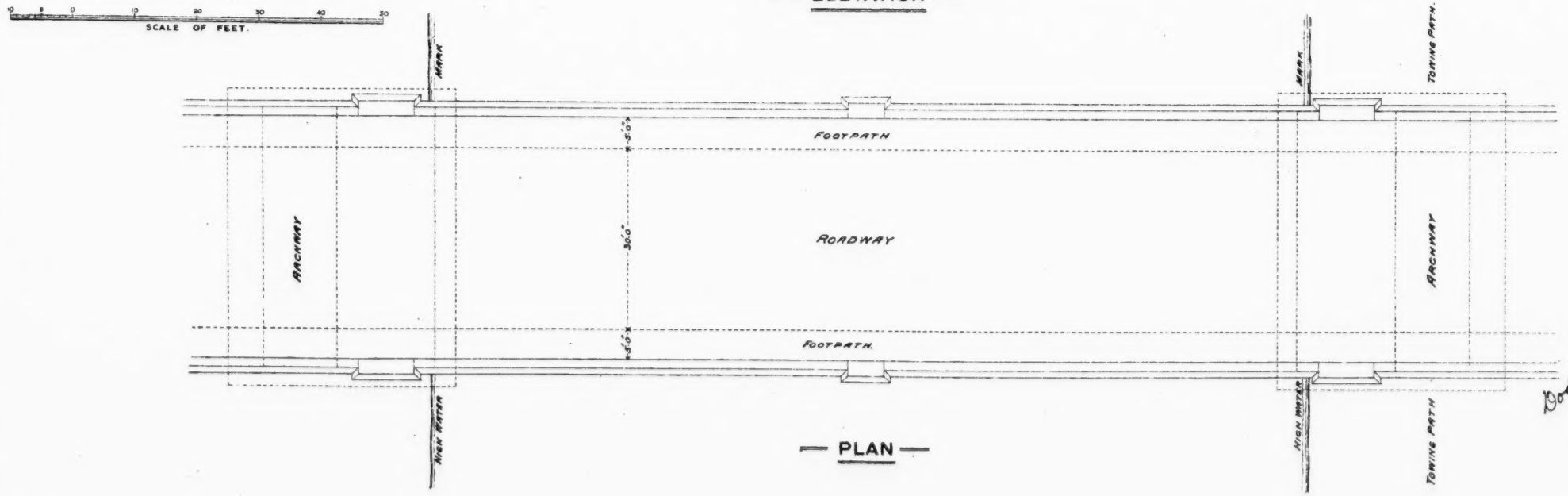
— PROPOSED BRIDGE OVER THE RIVER MEDWAY —

— DRAWING Nº 2 —

— PROPOSED BRIDGE OVER THE RIVER MEDWAY —
— AT AYLESFORD —



— ELEVATION —



— PLAN —

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